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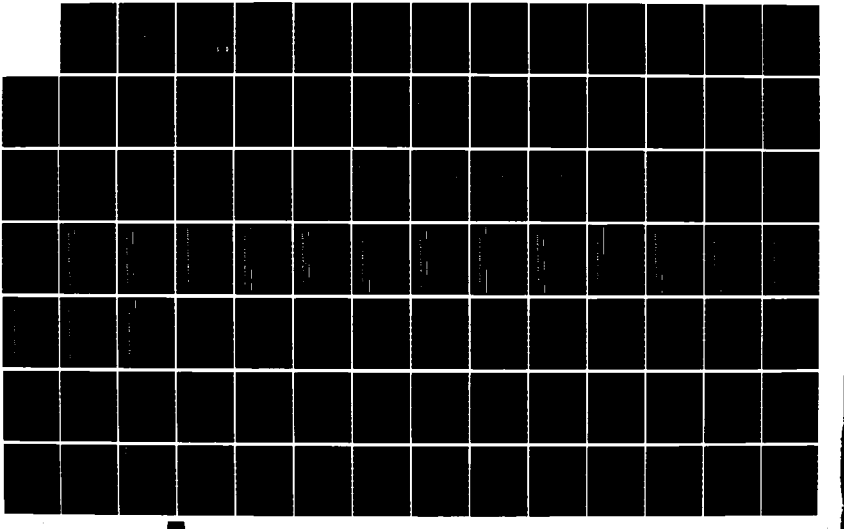

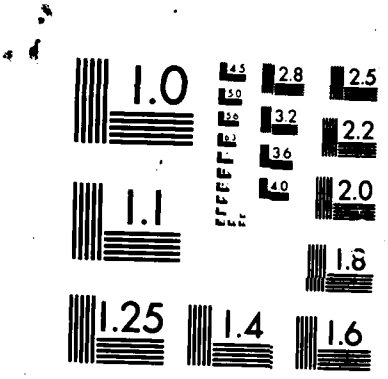

ANALYSIS OF THE ARMY MATERIEL COMMAND RADIATION PROTECTION PROGRAM

FINAL REPORT

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SAIC-86/1046

ANALYSIS OF THE ARMY MATERIEL COMMAND RADIATION PROTECTION PROGRAM

FINAL REPORT

28 FEBRUARY 1986

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Prepared for the
Belvoir Research Development and Engineering Center

Under
Contract Number DAAK70-84-D-0053
Task Order Number 0011

"The views, opinions and/or findings contained in this report are those of the authors and should not be construed as an official Department of the Army position, policy, or decision unless so designated by other documentation."

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This report documents an analysis of and recommendations to enhance the U.S. Army Materiel Command (AMC) Radiation Protection Program. Data was collected from all AMC installations that participate in radiation control activities. The data reflected radiation protection officer capabilities and specific installation radiation sources. The analysis and subsequent recommendations assess the scope of activities performed at AMC installations, management issues related to radiation control, tasks and responsibilities in support of radiation control, training status and requirements to train primary and alternate radiation protection officers, and the capability of primary and alternate RPOs to operate and calibrate specific ionizing radiation detection equipment.

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ANALYSIS OF THE U.S. ARMY MATERIEL COMMAND (AMC)

STUDY GIST

PRINCIPAL FINDINGS

- o There is a great diversity in both job classification and experience level for AMC personnel assigned as primary and alternate radiation protection officers (RPOs).
- o There are large numbers of RPOs that need training, many areas in which they have never been trained.
- o Some installations probably do not have adequate radiation protection.

MAIN ASSUMPTIONS

Field survey data reasonably approximates the real situation.

AR385-11, "IONIZING RADIATION PROTECTION (Licensing, Control, Transportation, Disposal, and Radiation Safety)", defines responsibilities and radiation protection procedures for AMC.

PRINCIPAL LIMITATIONS:

The accuracy of survey data is always a limiting factor. The large scope of the database prevented detailed analysis of all of the returned data. Emphasis was placed on examining issues known or expected to exist. The intent of the analysis was to prove or disprove, to the extent possible, whether adequate radiation control was being provided and to assess characteristics of AMC personnel in RPO positions.

SCOPE OF THE EFFORT:

To assess the status of the AMC radiation protection program by analyzing appropriate regulations and data returned to the BRDEC from AMC installations in response to a Government-developed survey.

OBJECTIVE:

To ascertain the status of the AMC radiation protection program and to make recommendations for improvement.

BASIC APPROACH:

Returned survey forms were organized and stored for future reference. A database structure was developed and survey responses were entered into a microcomputer database system for ease in analysis. An item analysis was performed on each question in the survey to ascertain a composite perspective based upon all responses to survey questions. Then analyses were performed to provide decision makers with summary data in viewgraph format. Finally, this final report, its appendices, the computerized database, and all original responses were submitted to Mrs. Barbara Wells of the Materials Fuels and Lubricants Laboratory.

ACTION TAKEN AS A RESULT OF FINDINGS: To Be Determined

STUDY SPONSOR:	U.S. Army Belvoir Research Development and Engineering Center
PRINCIPAL INVESTIGATOR:	Mr. Charles A. Dye, Science Applications International Corporation
COMMENTS AND QUESTIONS:	U.S. Army Belvoir Research Development and Engineering Center ATTN: STRBE-VP (Mrs. Barbara Wells) Fort Belvoir, Virginia 22060
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SECTION 1
INTRODUCTION

This report documents work performed by Science Applications International Corporation (SAIC) in support of the Belvoir Research Development and Engineering Center (BRDEC) under contract number DAAK70-84-D-0053, task order number 0011.

During the 1984-1985 timeframe, the U.S. Army Materiel Command (AMC) was assessing the adequacy of its radiation protection program. AMC tasked BRDEC to perform an assessment of Army personnel that were expected to perform radiation protection functions. This assessment took the form of a survey that covered these general topics:

- o Scope
- o Management
- o Tasks/Responsibilities
- o Training
- o Instrumentation.

In addition, surveyed installations were asked to submit job descriptions of personnel fulfilling primary or alternate radiation protection functions and to submit copies of all licensing agreements with the Nuclear Regulatory Commission (NRC) and Department of Army authorizations.

SAIC was contracted primarily to analyze survey data that had been returned to BRDEC. SAIC likewise examined Army regulations regarding radiation protection responsibilities and procedures, and radiation protection officer job descriptions to synthesize radiation protection functions. This analysis is presented in Section 2.

Returned survey data were used to construct a microcomputer database file for automated analysis. The nature of the automated analysis was discussed in SAIC's interim report, entitled "Analysis of Radiation Personnel Safety - 1984", dated 14 November 1985. Findings based upon the data discussed in the

referenced SAIC report are presented in Section 3. Recommendations to improve the U.S. Army radiation protection program are presented in Section 4. Section 2 summarizes RPO responsibilities and typical duties. Appendix A provides data in a graphic format that compares hours used to hours required for completion of the radiation protection program for all installations in each general topic listed above. This data was used in Section 3 to develop a rank order for installations having the greatest discrepancy between hours required and hours used to perform radiation tasks identified in the survey. Appendix B provides a listing of respondents to the survey. Appendix C provides a blank survey form and its transmittal letter.

SECTION 2

AN OVERVIEW OF THE U.S. ARMY RADIATION PROTECTION PROGRAM

RADIATION CONTROL RESPONSIBILITIES

Army Regulation 385-11 establishes policies and responsibilities for the licensing, control, transportation, and disposal of radioactive material, and ionizing-radiation-producing devices and their related hazards. The primary objectives of the regulation are to ensure that radiation protection responsibilities are given ample priority, that plans and resources exist to cope with emergencies, and to ensure compliance to rules.

Responsibilities are divided into three categories. These are responsibilities for specific organizations, general responsibilities for all organizations and responsibilities for specific personnel within organizations. Overall responsibility rests with the Army Materiel Command (AMC). Local, direct control of individual radioactive items or products rests with the local commander and is administered by the Radiation Protection Officer (RPO) in conjunction with the Radiation Control Officer (RCO) and the Local Radiation Protection Officer(LRPO). These individuals are directly responsible for maintaining regulatory and reporting requirements.

Specific organizations that are involved in the radiation protection program are AMC, Army Armament and Chemical Munitions Command (ARMCCOM), National Guard Agency, The Surgeon General, Director of Safety, Federal Agencies (Nuclear Regulatory Commission, Department of Transportation, US Postal Service), Military Traffic Management Command, and the Transportation, Energy and Troop Support Agency. These specific organizations have either policy, guidance and monitoring responsibilities or staff advisory duties. In addition, several provide technical support on radioactive material.

Other organizations involved with radioactive materials include major Army commands, major AMC readiness commands, major field commands, major oversea commands and local commands. These organizations develop

administrative policies based on AR 385-11 including establishment of radiation programs, emergency plans, and disposal procedures. The commander of these installations is responsible for these actions.

Specific personnel involved in the program include the point of origin commander, the receiving activity commander, the logistics commander, the RPO, the RCO and the LRPO. These individuals inspect, monitor, control, approve and report all items that are stored, used and moved between locations.

The following three tables each define one of the three categories of responsibility and show the organization/personnel with the associated responsibility.

RADIATION PROTECTION FUNCTIONS

An analysis of submitted personnel job descriptions was performed to synthesize the range of RPO duties. The remainder of this section provides a summary of that analysis.

The radiation protection officers are one of the most important components in the radiation protection program as they lead and maintain protection programs at local sites where radioactive materials are handled. There are eight major functions that the RPOs perform. These functions are

- o establishing radiation protection program
- o developing procedures
- o routine checking and surveying
- o training
- o investigating
- o technical consulting
- o monitoring issue of items
- o managing and supervising

Table 2-1. Specific Organizational Responsibilities

Organization	Responsibility
AMC	licensing and control of radioactive material provide policy and technical support for storage, disposal and movement resolve problems in other Army elements
ARMCCOM	provide transport escorts maintain disposal records manage disposal contracts
National Guard	ensure radiation protection for NG follow leak test, control and reporting procedures
Surgeon General	comment and recommend on health hazards perform periodic radiological hygiene surveys provide medical advice on disposal of material
Director of Safety	staff support all Army safety activity
Military Traffic Management Command	monitor movement of radioactive material interface with Department of Transportation (DOT) for transport permits
Federal Agencies- Nuclear Regulatory Commission (NRC)	approves packaging of radioactive material
DOT	regulates interstate movement
US Postal Service	regulates postal movement
Transportation, Energy and Troop Support Agency	staff supervision and guidance on movement and safety

Table 2-2. General Organizational Responsibilities

Organization	Responsibility
Major Army command	establish radiation material control point (RMCP) appoint Radiation Control Officer (RCO) for each control point implement leak test, control and reporting procedures ensure an effective radiation protection program and emergency plans
AMC major subcommand	testing of radioactive product establish life cycle instructions provide technical guidance of safety and use monitor compliance with NRC or Service terms maintain data and records obtain and monitor permits and licenses fulfill function of RMCP
Major field command	designate command Radiation Protection Officer (RPO) prepare adminstrative plans for compliance with AR 385-11 and emergencies hold annual inspections
Major oversea command	provide procedures for disposal of radioactive waste conduct annual inspections provide escorts for disposal
Local commands	establish formal safety program designate local RPO (LRPO) provide technical and adminstrative review for compliance with regulations for use, safety, permits and licenses maintain inventory

Table 2-3. General Personnel Responsibilities

Personnel	Responsibility
Point of origin Commander	ensure consignee authority arrange, coordinate movement inspect, package material for movement
Receiving activity Commander	accept shipment arrange for expedient pickup monitor packages notify NRC or Army command of any accident, incident or discrepancy
Logistics commander	ensure technical literature includes amount and type of material, safe handling, storing and disposal, prevention of enemy use prepare security disposal plan
Commanders with unwanted material	ensure decontamination if possible report surplus material obtain disposal instructions and provide for shipment
Ionizing Radiation Control Committee (IRCC)	advisory body to commander establish local rules and procedures for procurement, storage and safe use of radiation sources
Radiation Protection Officer (RPO)	responsible for radiation safety program provide guidance on working conditions instruct personnel in safety practices evaluate and document hazards review facilities
Radiation Control Officer (RCO)	manage and operate RMCP review and approve LRPOs in geographical area train LRPO maintain records and perform reporting scientific or engineering background and radiation training
Local Radiation Control Officer (LRPO)	ensure controlled items in jurisdiction are stored and used properly maintain records for individual items report changes, accidents, incidents or damage establish radiation control areas, post signs and procedures

The primary responsibility of the RPO is the establishment of the radiation protection program. The goal of this program is the protection of personnel utilizing and/or handling all forms of radiant energy. The RPOdevelops, initiates, and directs programs to ensure lifetime control of commodities by controlling design, labelling, storage, useage, maintainance and disposal.

A necessary part of the radiation protection program is the development of methods, procedures, and techniques for the handling, storage, disposal, and decontamination of radioactive materials. The RPO is the focal point for the command program and takes the lead in reviewing current procedures and modifying and/or developing new ones as needed based on technical expertise and knowledge. In addition, facility layout and equipment requirements come under his authority as well as life cycle instructions and testing for any new systems development effort concerning radiant energy. Any instruction and guidance needed in these areas will be developed under the RPO's authority.

On a routine and periodic basis, the RPO performs checks and surveys of the facilities, personnel, equipment, records, and inventory. During these surveys, the RPO checks for hazards, non compliance with regulations and procedures, and health status of personnel. Equipment and radiation sources are checked for leaks and hazards. Data is collected and reported for each survey. If any inadequate measure, procedure, equipment, clothing or other item is found, the RPO recommends or mandates changes, corrections, additions, or improvements.

In order to maintain an adequate program, the RPO initiates or provides training to all personnel in the radiation program. This includes determination of training necessary for various positions, continuing education for personnel and special training as necessary.

The instruction covers safe working practices, emergency procedures, harmful effects of radiation overexposures, and other topics required by 10 CFR 19 and 29 CFR 1910.

The RPOs investigate any incidents, accidents, violations or discrepancies that occur within their jurisdiction. Data are collected and corrective action taken. All investigations are reported to the proper higher authority. The RPO is responsible for ensuring that these occurrences do not recur by making changes as needed in regulations, procedures, etc.

The RPO serves as the technical consultant to the commander, subordinate personnel in the command, contractors, and outside personnel involved in any form of the radiation program. The RPO must keep abreast of new technology and new developments in health and radiological safety. He advises managers, engineers, and scientists on the radiological safety aspects of facilities, equipment, tests, experiments, and industrial operations involving sources of ionizing radiation.

The RPO monitors the issue of radioactive items by reviewing each issue and administering any NRC or DA controls. He also inspects any items going out or coming into his jurisdiction and approves them based upon compliance with appropriate ruling regulations.

Typically, the RPO has a supervisory and management function. The radiation protection program involves scientists, engineers, and radiological technicians who report to the RPO. The RPO has the usual responsibilities of the manager concerning subordinate training, work performance, and administrative functions.

SECTION 3
STUDY FINDINGS

This section summarizes analyses performed using the basic item analysis data as presented in SAIC's interim report, entitled "Analysis of Radiation Safety Personnel Survey - 1984", dated 14 November 1985. As one would expect, survey data of this magnitude can be summarized in many different ways. The content of figures and tables in this section cover those topics that were considered to be most important to understanding the status of personnel and installations participating in the U.S. Army Radiation Protection Program at AMC installations. This section is subdivided to correlate with the five parts of the survey. A sixth subsection covers conclusions based upon a careful review of the data contained in the first five subsections.

SURVEY PART I - SCOPE OF AMC RADIATION CONTROL

Part I of the survey identified the respondent and collected general information on the Radiation Protection program at the installation. A profile of installations that participate in radiation protection is presented in Table 3-1. Column one lists the primary emphasis of these installations. It should be noted, that some installations identified have more than one type of emphasis. For example, an answer may have indicated that the installation was involved in both commodity readiness, and research and development. This table gives the number of responses given in each category and the percent of the responses in each category. Those falling in the "other" category are listed in Table 3-2.

SURVEY PART II - PERSONNEL MANAGEMENT

Part II of the survey sought to collect data on AMC personnel that have performed radiation protection functions over the five year period ending May, 1984.

Table 3-1. Profile of Installations Requiring Radiation Protection.

Type	Number	Percent
Ammo.Plant	18	14.8%
Arsenal	7	5.7%
Commodity Readiness	10	8.2%
Depot Storage	17	13.9%
Depot Maint.	12	9.8%
R & D	18	14.8%
Testing	19	15.5%
Other	21	17.2%

Table 3-2. Other Specified AMC Program Types as Referenced in Table 3-1.

Program Type
Armament R&D Center
R&D Command
Headquarters
Facilities Contract
Calibration
US Army Tank/Automotive Com.
Radiation Protection Survey
Gas Chromatography Using EC
Med. Trtmnt. (Xray & Diathermy)
In Process Control
Ammo. Storage, Missile Maint.
Support of More than 40 Orgs.
Possession of Radiation Instr.

Table 3-2. Other Specified AMC Program Types as Referenced in Table 3-1 (Cont.)

Program Type
Special Weapons Mission & IRI, RI, Periodic, Special
Personnel Dosimetry Lab
Rad. Prot. Eval. & Req. Asst.
Munition Assessment
Calibration Activities (Worldwide)
Conslt., Survey Clean Up Site
US Army Test & Eval. Command

Areas examined were current radiation protection personnel, personnel turnover, the organizational structure, radiation protection deficiencies, job descriptions, the level of effort required for radiation protection, and contractor radiation protection efforts.

Job classifications for current AMC personnel serving as RPOs are presented in Table 3-3. This list is ordered by job classification from the greatest to the least number of personnel within the category serving in RPO positions. There were 50 health physicists and 20 safety and occupational health management personnel. The remaining named categories range from seven positions to two positions. The "other" entry includes all other categories where only a single occurrence was identified.

Survey data regarding current personnel fulfilling primary and alternate radiation protection positions was summarized to develop the data in Figure 3-1. Radiation protection personnel were categorized by job classification and GS level; then tabulated to obtain a distribution of radiation protection personnel in terms of job series and experience level.

The GS levels ranged from a 4 to a 15 within 20 stated job classifications. The mode of the distribution which occurred 18 times was a 1306 series at the GS 12 level. The second most frequent occurrence was a 1306 at the GS 13 level which occurred 11 times. No other category occurred more than eight times.

A total of 119 radiation protection personnel left their jobs over the last five years. 89 of those identified provided a reason for departure. These 89 responses were used to develop the profile of reasons given for RPO turnovers as presented in Table 3-4.

Approximately one-third of the reasons indicated either promotion or higher pay as the reason for departure. Another third, 31.6%, either changed jobs or were reassigned. Neither of these two responses well define the reason for departure. Another 21.2% retired or were separated from the Army thereby ending their activities in radiation protection.

Table 3-3. Profile of AMC Primary and Alternate RPOs.

Job Classifications
Health Physicist
Safety and Occu. Health Mgmt.
Physical Science Technician
Safety Engineering
Physicist
Chemist
Chemical Officer
Elect. Technician
Physical Scientist
Eng. Technician
Metallurgist
Quality Assurance
Other

JOB CLASS	GS LEVELS											
	04	05	06	07	08	09	10	11	12	13	14	15
0018						8	1	8	2	1		
0800								1				
0802						1		1				
0803		1				1		1	2	5	1	
0830										1		
0855										1		
0856								2	1			
1301		1		1		1						

Figure 3-1. RPOs by Classification and Level.

SERIES	POSITION TITLE
0018	Safety & Occupational Health Management Series
0800	Engineering Group
0802	Engineering Technician
0803	Safety Engineering
0830	Mechanical Engineering
0855	Electronics Engineering
0856	Electronics Technician
1301	Physical Scientist

JOB CLASS	GS LEVELS											
	04	05	06	07	08	09	10	11	12	13	14	15
1306				4		3		6	18	11	1	
1310									4	1	1	1
1311	1		2	2	1	4	1	6				
1320									2	1		
1321								1		1		
1529									1			
1910						1		1				
2032						1						

Figure 3-1. RPOs by Classification and Level.
(Continued)

SERIES	POSITION TITLE
1306	Health Physicist
1310	Physicist
1311	Physical Science Aid/Technician
1320	Chemist
1321	Metallurgist
1529	Mathmatical Statistician
1910	Quality Assurance
2032	Packaging Specialist

JOB CLASS	GRADE LEVELS											
	E2	E3	E4	E5	E6	E7	O1	O2	O3	O4	O5	O6
54E						1						
55D					1							
74A									3		1	
91X					1							

Figure 3-1. RPOs by Classification and Level.
(Continued)

SERIES	POSITION TITLE
54E	Nuclear Biological Chemical Specialist (EN)
55D	Explosive Ordinance Disposal Specialist
74A	Chemical Officer w/NBC Training (OFC)
91X	Health Physicist Specialist (EN)

Table 3-4. Reasons Given for RPO Turnovers.

Reason	Percent
Promotion	26.9%
Reassignment	21.5%
Retired	12.3%
Changed Jobs	10.1%
ETS	8.9%
Higher Pay	6.7%
Deceased	3.7%
Personal	3.3%
Officer Rep.	2.2%
Others	4.4%

Current radiation protection personnel names, resumes, and job descriptions as submitted in conjunction with the survey are available at the BRDEC.

There were twelve interruptions in the performance of AMC radiation programs over the three year period from 1981 through 1983. In four instances, the interrruption exceeded 30 days and resulted from vacancies. Two of these instances cited lack of qualified personnel. In perspective, however, 52 activities responded over a three year period and only four occurrences of interruption in the radiation protection program exceeded 30 days. A straight ratio of days covered to days in the three year period for all activities would yield a 96% coverage. In one instance, an RPO was called in from another facility to provide interim coverage. This instance was considered as being effective and not counted as an interruption.

SURVEY PART III - RADIATION PROTECTION TASKS AND RESPONSIBILITIES

The intent of Part III of the survey was to determine whether additional personnel hours were required to ensure the adequacy of the AMC Radiation Protection Program. After completion of detailed item analyses as discussed in SAIC's referenced interim report, a sum total of hours expended on radiation protection tasks was developed for each participating installation in these functional areas:

- o Management
- o Planning
- o Training
- o Operations.

A sum total of hours required to perform all tasks in the above functional areas was then developed for each installation.

These totals were used to develop graphs like those shown in Figure 3-2 and Figure 3-3. Figure 3-2 presents the hours actually expended on management related radiation protection tasks for approximately half the survey respondents who perform radiation protection functions. The numbers

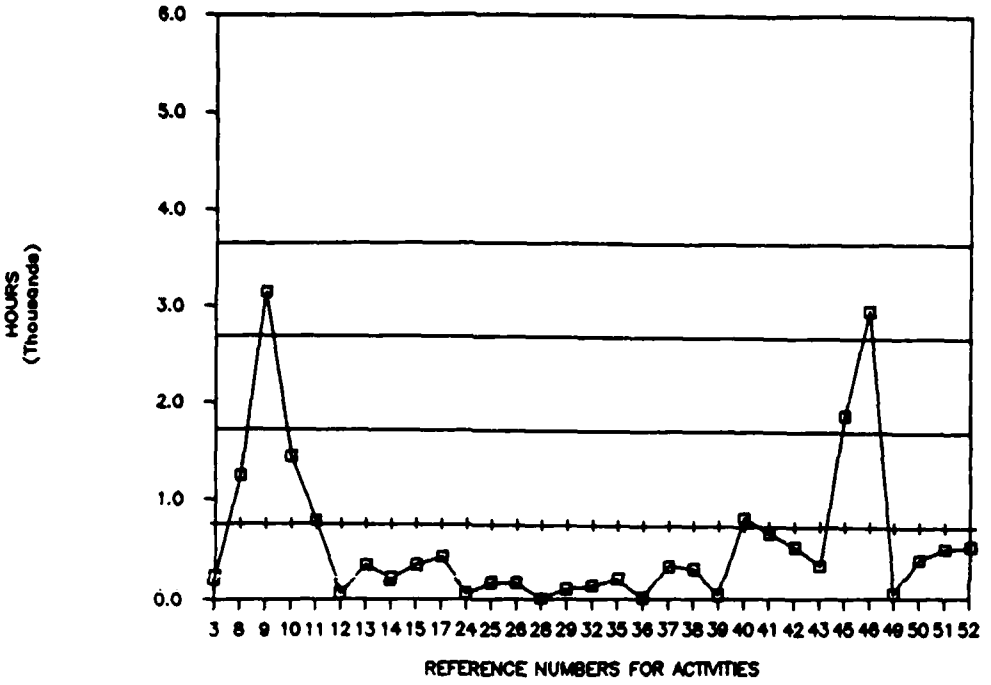


Figure 3-2. Management Hours Used for Radiation Protection Functions. (Part 1)

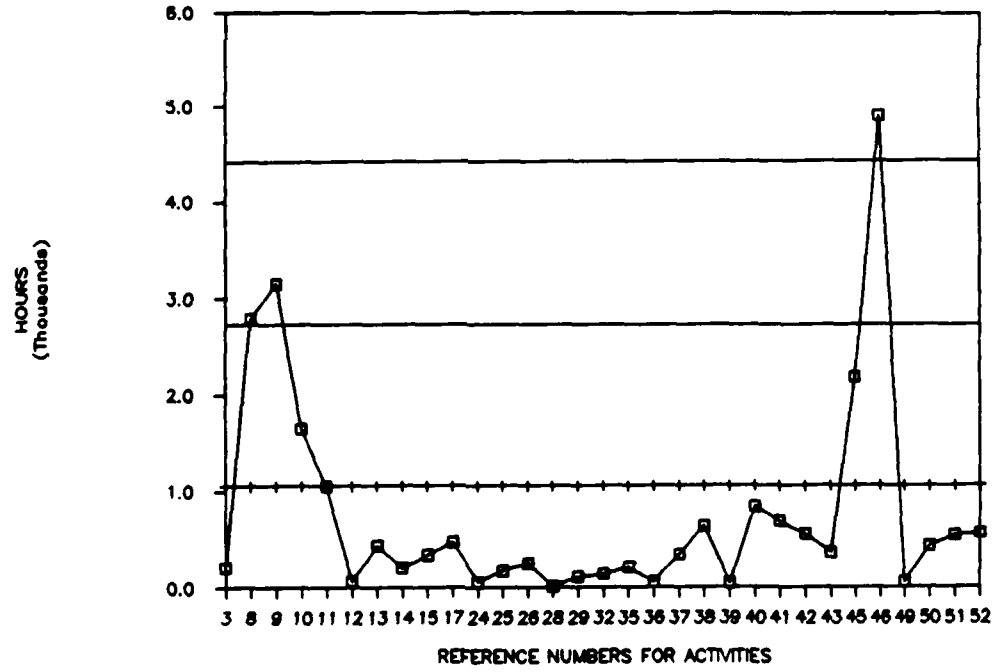


Figure 3-3. Management Hours Required for Radiation Protection Functions. (Part 1)

along the horizontal axis uniquely identify installations. The dashed horizontal line above the horizontal axis represents the average number of hours used based upon all responses. The other solid horizontal lines represent standard deviation values. For example, installation number 46 used hours more than two standard deviations from the population average. This installation is in the top five percent of all respondees based upon actual usage. A complete list of installations in numerical order is provided in Appendix B. A complete set of responding installation graphs covering all participating installations over the functional areas is provided in Appendix A.

Figure 3-3 presents, in an identical format, information regarding the number of hours each installation requires for performing radiation protection management tasks. In all cases, actual hours were less than or equal to required hours.

A comparison of the data in these two figures would indicate that installation number 46 has the greatest discrepancy between hours required and hours used for management tasks in support of radiation protection.

A sum total of the computed discrepancies was developed for each installation using discrepancies in management hours, planning hours, training hours and operations hours. This total discrepancy value was used to rank order installations based upon the stated need for more support in their respective radiation protection programs. The ten installations that showed the greatest shortfall between hours used and hours required are listed in descending order of their stated need in Table 3-5.

SURVEY PART IV - TRAINING

Training was addressed in survey Part IV in terms of both general academic background and in specialized training in ionizing radiation protection techniques. Personnel in current, primary or alternate, RPO positions were asked to identify whether they had been trained in specified courses and specified radiation protection techniques.

Table 3-5. Top Ten RPO Locations that Require More Support.

Installations
HQ Tobyhanna Army Depot
US Army Missile Cmd. (Redstone)
Rock Island Arsenal
Red River Army Depot
Rad. Prot. Office (White Sands)
Hawthorne Army Ammun. Plant
US Army Ballistic Research Lab.
US Army Ioniz. Rad. Dos. Center
HQ Lexington Blue Grass Depot
HQ US Army Aviation Sys. Cmd.

Academic coursework most frequently listed as needed was rank ordered based upon the greatest number of personnel requiring that training. A list in descending order of need for the top twenty academic courses is presented in Table 3-6. Radiobiology was most frequently identified and chemistry was least requested in the top twenty.

Ionizing radiation techniques most frequently listed as needed were also rank ordered based upon the greatest number of personnel requiring training in that technique. A list, in descending order of need, of ionizing radiation techniques are presented in Table 3-7.

SURVEY PART V - INSTRUMENTATION

The last part of the survey collected data on the need for RPO training on specific instrumentation equipment. The responses from the instrumentation questions required a two-level examination. First, the responses that indicated a need for training on a certain type of equipment was tallied. This figure represented the "global" need for training on each type of equipment. Second, the responses had to be placed in context with the environment of the respondent. A respondent may have indicated a need for training on equipment that wasn't used at their installation. That would account for their lack of training and negate any real need for training in that particular instance. Therefore, the responses were tallied by those having the type of equipment at their installation and requiring training on it. These data are presented in the next four tables for laboratory, survey, air monitoring, and personnel monitoring equipment. The first column in each table identifies a specific radiation assessment technique; the second column specifies the percent of all responding primary and alternate RPOs that indicated they required training in the specified area. The third column represents the percent of RPOs having the equipment at their installation that require training.

Table 3-8 shows the percent of RPOs requiring training on laboratory equipment. Training required on survey, air monitoring, and personnel monitoring equipment is presented in Table 3-9, Table 3-10, and Table 3-11 respectively.

Table 3-6. Academic Training Ordered Based Upon the Number of Requests.

Course
Radiobiology
Nuclear Engineering
Radiochemistry
Physics (Higher)
Ethics
Supervision
Ecology
Management
Electronics
Chemistry (Analytic)
Chemistry (Organic)
Calculus (Differ.)
Calculus (Integral)
Public Speaking
Trigonometry
Physics
Psychology
Geometry
Biology
Chemistry

Table 3-7. Ionizing Radiation Protection Training Needed.

Topics
Depleted Uran. Munition Safety
Quality Assurance/Rad. Safety
Depleted Uranium Mfg.
Bioassay Techniques
Accelerator Safety
Industrial Hygiene Instrumentation /Survey Techniques
Radioactive Waste Mgmt.
Dosimetry Internal
Env. Radiological Monitoring
Dosimetry TLD
Industrial X-Ray Safety
Reactor Safety
ALARA
Dosimetry, Neutron
Record Keeping
Emergency Plan/Control Decon.
Contamination Control/Decon.
Air Monitoring Techniques
Instrument Calibration
Occupational Rad. Protection

Table 3-8. Instrumentation Laboratory Equipment Percent Requiring Training.

Type	Total	W/Type
Liq. Scint.	27.4%	11.1%
Gas Flow	22.4%	11.2%
Multi.	36.4%	21.9%
Gel I	40.7%	16.1%
Scint. Detect.	26.2%	15.0%
Therm. Dos.	39.3%	17.6%
R-Chamber	36.3%	13.8%
Alpha Gas	31.6%	10.3%
Alpha Scint.	18.8%	0.0%

Table 3-9. Instrumentation Survey Instruments Percent Requiring Training.

Type	Total	W/Type
Alpha Gas	31.6%	10.3%
Alpha Scint.	18.8%	0.0%
Ion Chamber	14.6%	4.6%
S. Channel	29.7%	8.3%
RPO Em. Kit	26.8%	13.6%
GM Meter	6.8%	0.0%
Fast Neutron	39.7%	15.6%
Slow Neutron	42.3%	15.3%
Therm. Neut.	43.9%	21.7%

Table 3-10. Instrumentation Air Monitoring Percent Requiring Training.

Type	Total	W/Type
Gas Moni.	28.8%	15.7%
Particulate	25.2%	10.7%
Air Vel.	29.0%	6.8%

Table 3-11. Instrumentation Personnel Monitoring Percent Requiring Training.

Type	Total	W/Type
Pocket Dos.	4.8%	3.5%
Film Badges	5.6%	1.2%
Thermo. Dosi.	23.9%	8.3%
Chirpers	19.0%	1.7%

CONCLUSIONS

Five conclusions are worthy of being stated prior to the study recommendations in the last section. These conclusions are as follows:

- There is a great diversity in both job classification and experience level for personnel assigned primary and alternate RPO duties. It is quite possible that many of these RPOs are not capable of performing the RPO functions as mandated in Army regulations and Nuclear Regulatory licensing agreements.

- There are large numbers of RPOs that identified a need for training, much of it in areas in which they have never been trained. Many more responses than were shown in this report stated they needed refresher courses but that they had received some training in one or two week courses. More specific training related to radiation protection activities must be provided to RPOs. Local commanders must insure that the training is utilized.

- Many installations identify significant discrepancies between hours allotted for radiation protection and hours that are actually required to perform radiation protection functions.

- A need exists to perform installation specific evaluations to ensure that the diversity in RPO personnel, the need for training, and the discrepancies between hours allotted and hours required for radiation protection tasks do not result in inadequate radiation protection at AMC installations.

- There is probably a need to assess other DA installations as well as AMC.

SECTION 4
RECOMMENDATIONS

Recommendations fall in the area of training and career development, recruitment, awareness and accountability.

- o A health physics internship should be included as an integrated part of the safety internship program as a means of developing badly needed well- trained RPO personnel. Careful screening of prospective candidates should be made to ensure adequacy of their existing academic background prior to selection for specialized training.

- o Consider a special pay status for health physicists to attract as many qualified candidates as possible to reduce training requirements and to expedite hiring fully qualified RPO personnel.

- o Formulate a list of institutions that provide required radiation protection training. Identify deficiencies and develop training programs within either AMC or the Training and Doctrine Command. Obtain a decision, if necessary, at the Department of Army level on who has the training responsibility.

- o Identify installation specific deficiencies along with recommended solutions and forward deficiencies with recommended solutions to responsible personnel and installation commanders. Make key decision makers more aware of the implications of inadequate radiation protection.

- o Develop a method that allows AMC to more efficiently monitor radiation personnel qualifications and the adequacy of specific installation radiation protection procedures.

APPENDIX A

RADIATION PROTECTION TASKS AND RESPONSIBILITIES

GRAPHS USED TO RANK ORDER
INSTALLATIONS BASED UPON THE
GREATEST STATED DEFICIENCIES

FEBRUARY 28, 1986

FOREWORD

For a discussion on how to interpret data found in these graphs, please refer to Section 4 under subtitle Radiation Protection Tasks and Responsibilities.

LIST OF FIGURES

FIGURE A-1

MANAGEMENT HOURS REQUIRED

PART 1

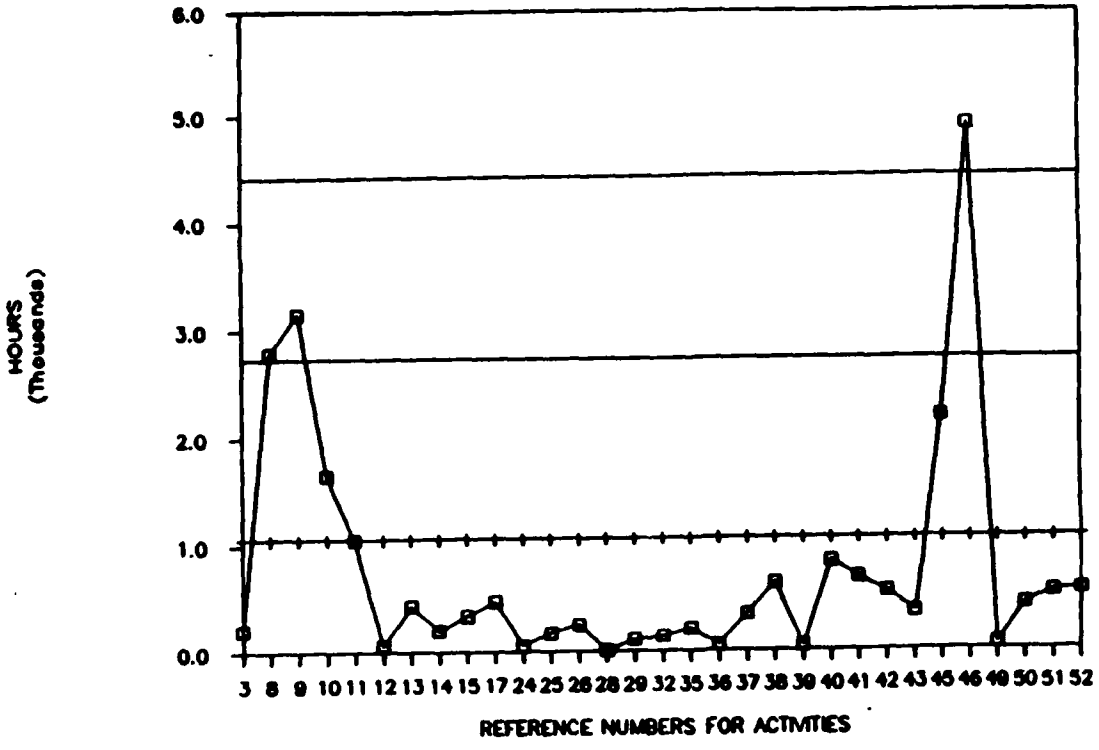


FIGURE A-2

MANAGEMENT HOURS USED

PART 1

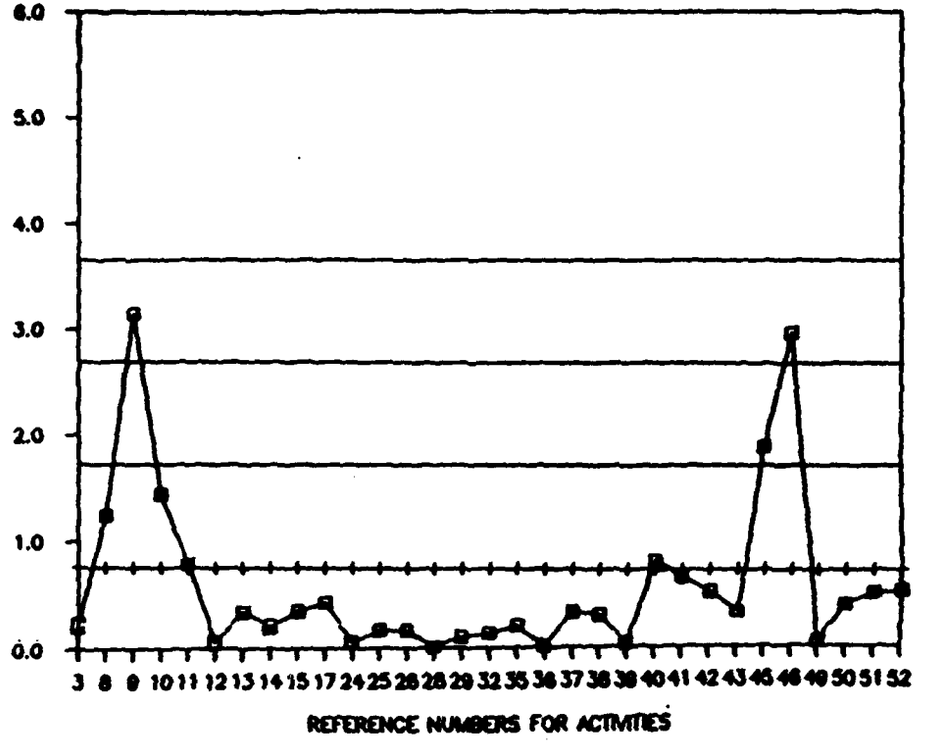


FIGURE A-3

MANAGEMENT HOURS REQUIRED

PART 2

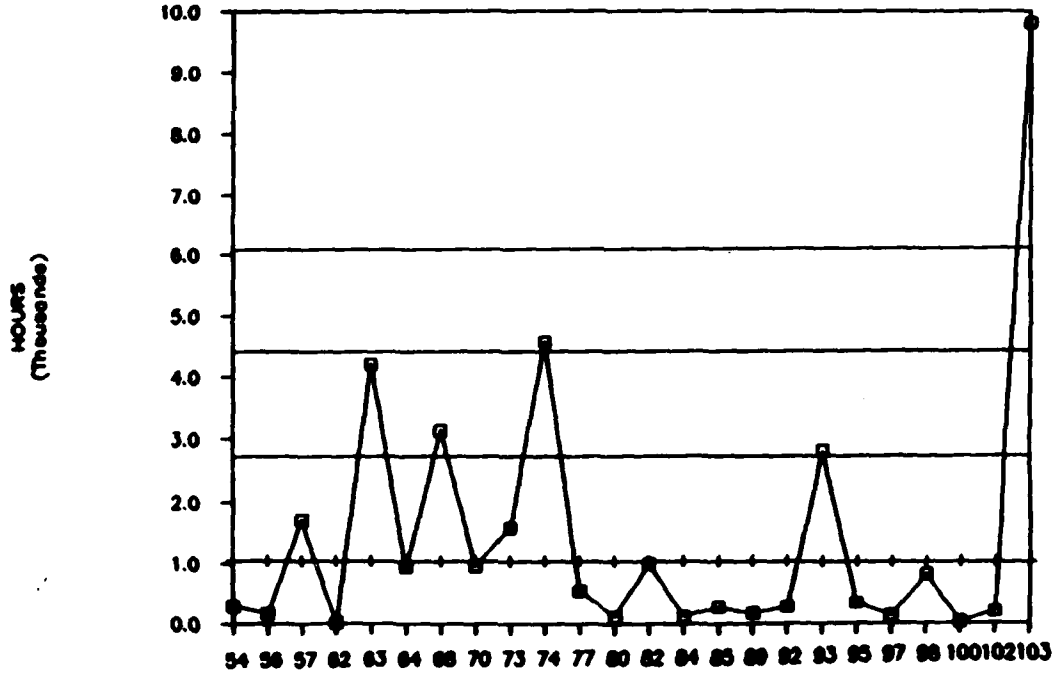


FIGURE A-4

MANAGEMENT HOURS USED

PART 2

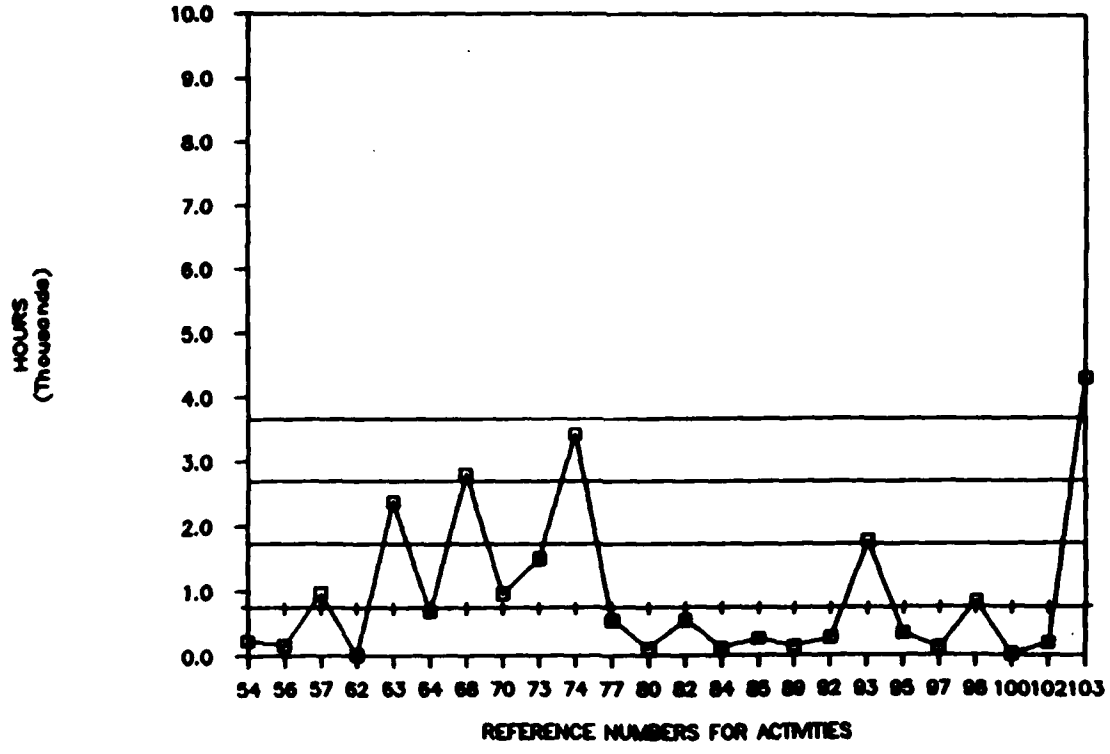


FIGURE A-5

PLANNING HOURS REQUIRED

PART 1

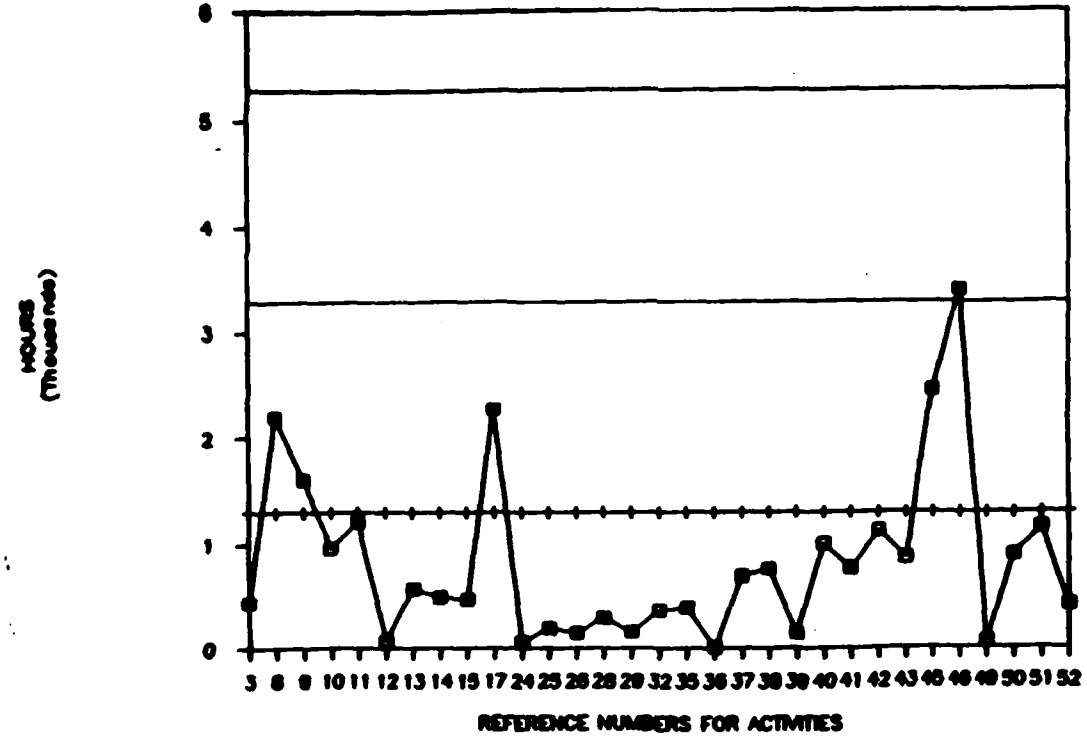


FIGURE A-6

PLANNING HOURS USED

PART 1

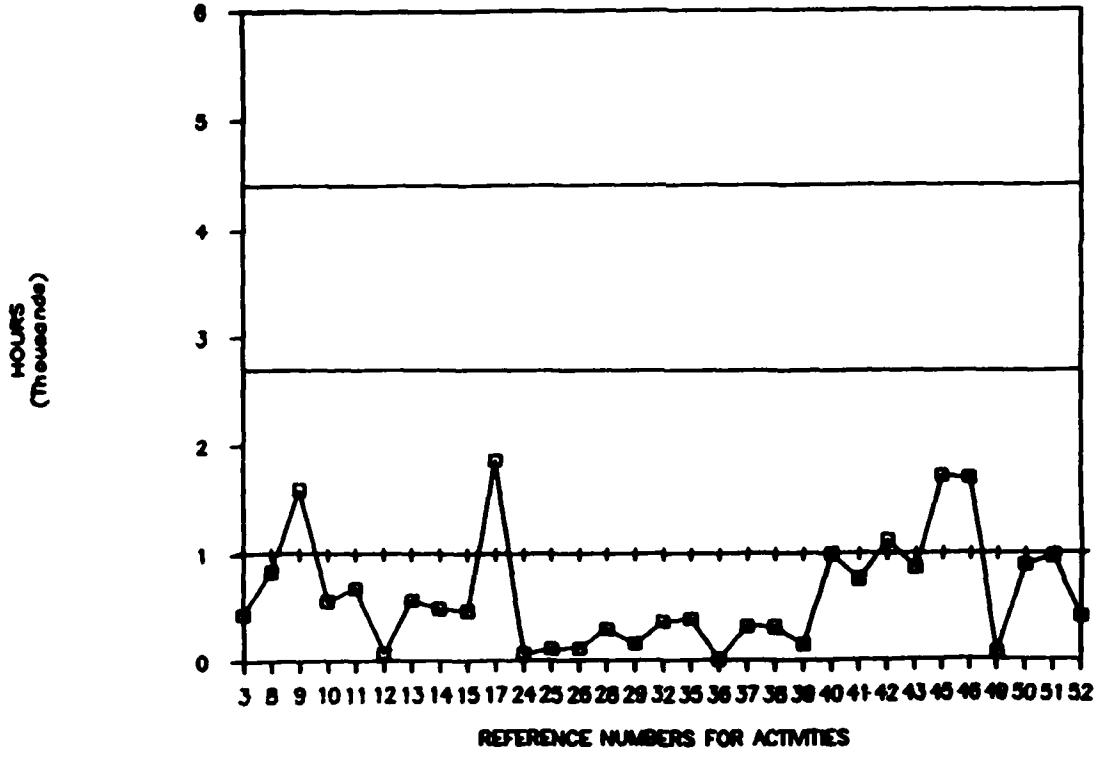


FIGURE A-7

PLANNING HOURS REQUIRED

PART 2

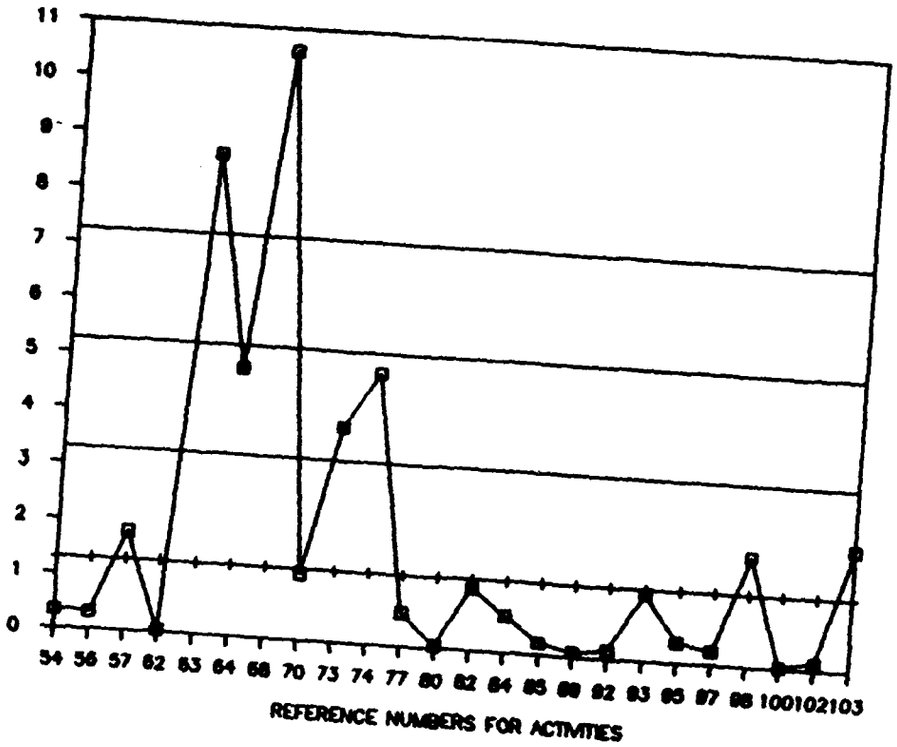


FIGURE A-8

PLANNING HOURS USED

PART 2

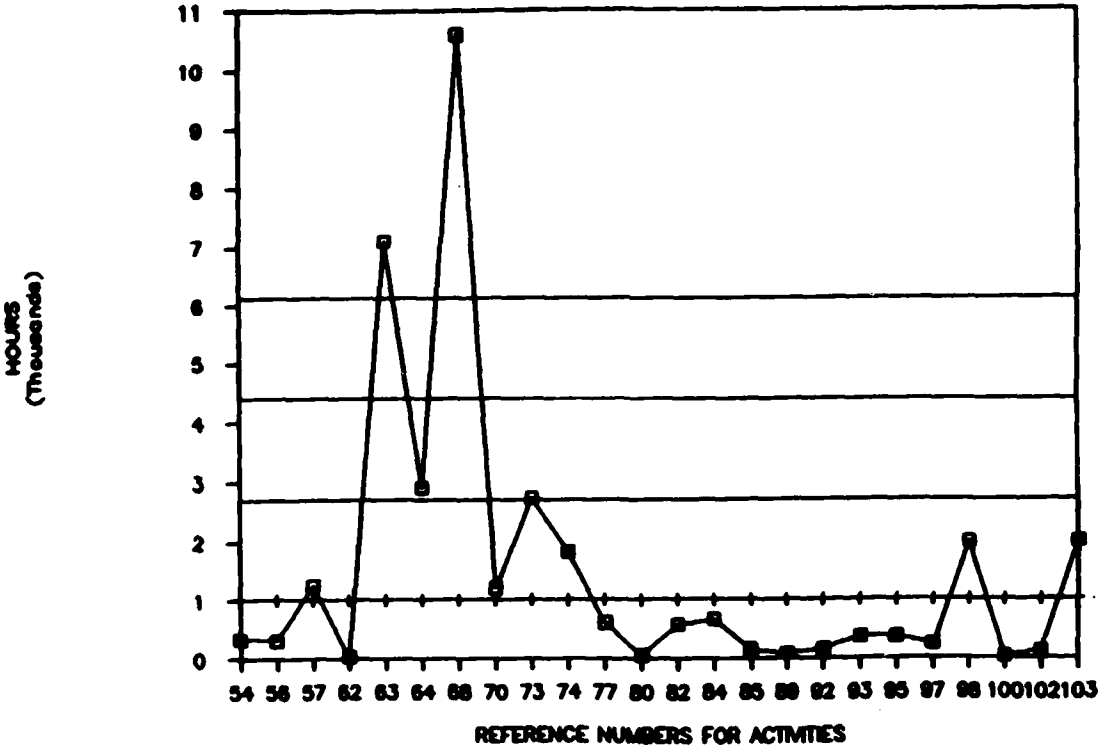


FIGURE A-9

TRAINING HOURS REQUIRED

PART 1

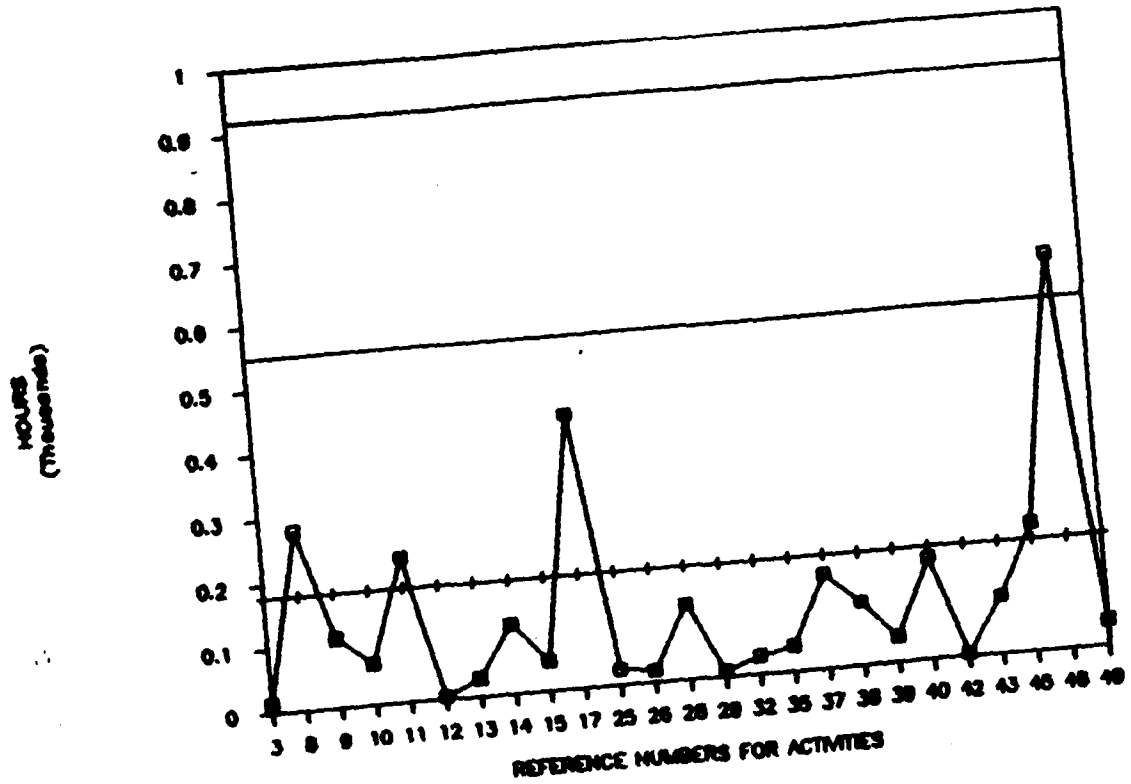


FIGURE A-10

TRAINING HOURS USED

PART 1

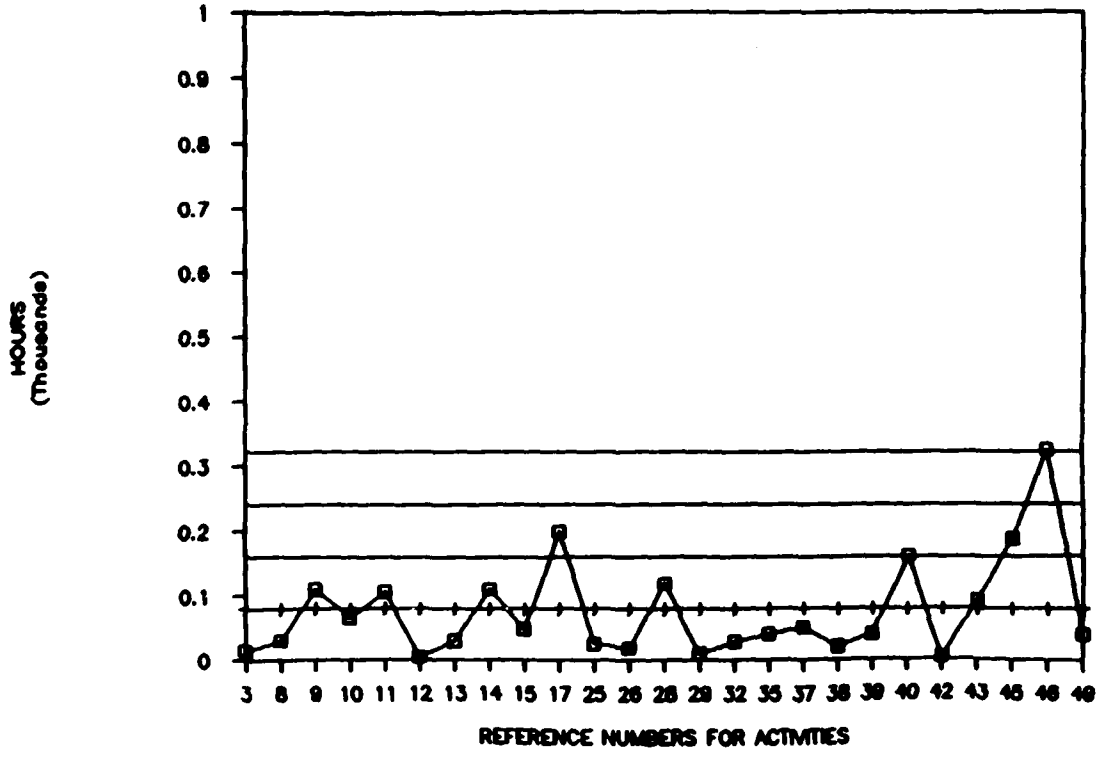


FIGURE A-11

TRAINING HOURS REQUIRED

PART 2

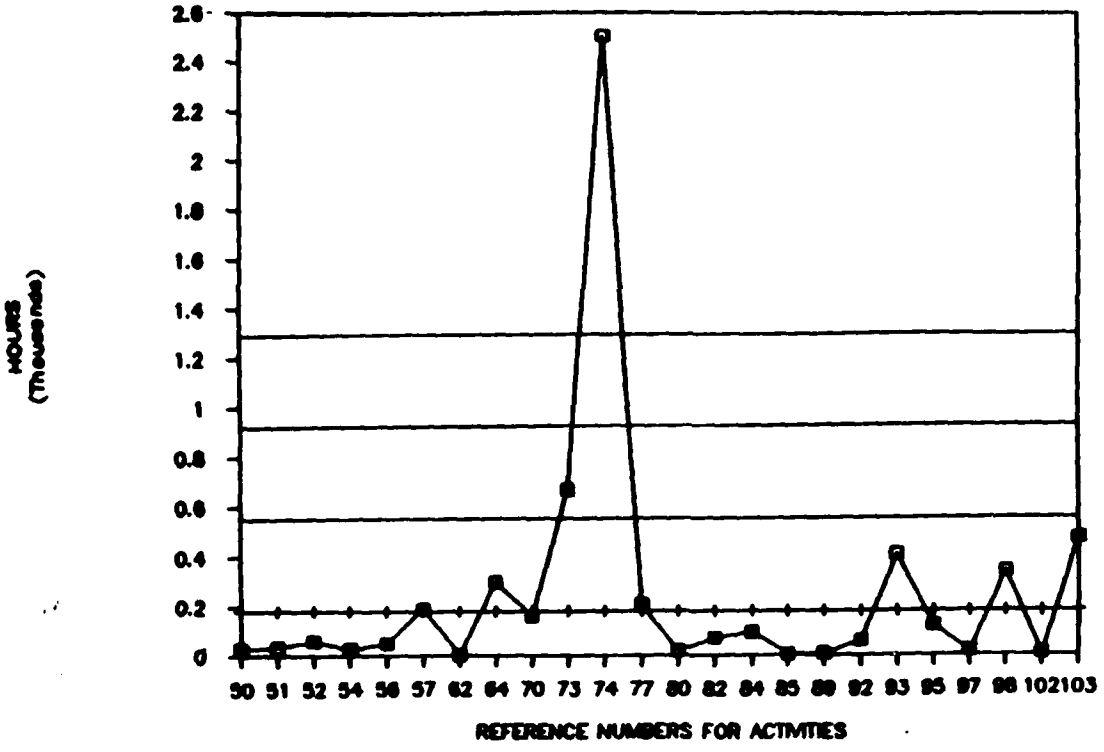


FIGURE A-12

TRAINING HOURS USED

PART 2

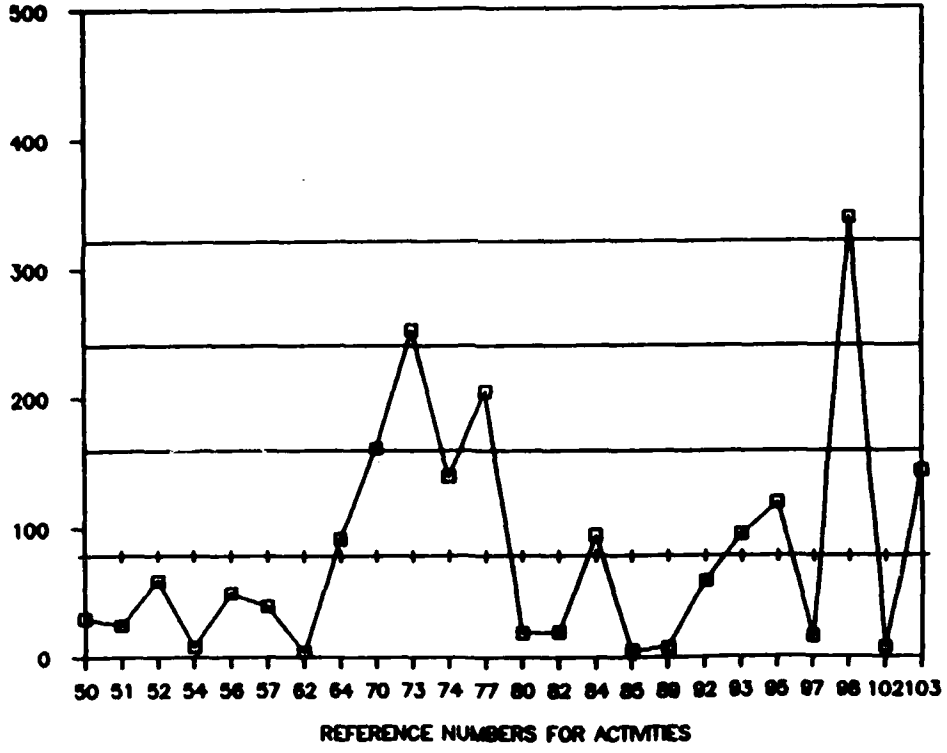


FIGURE A-13

OPERATIONS HOURS REQUIRED

PART 1

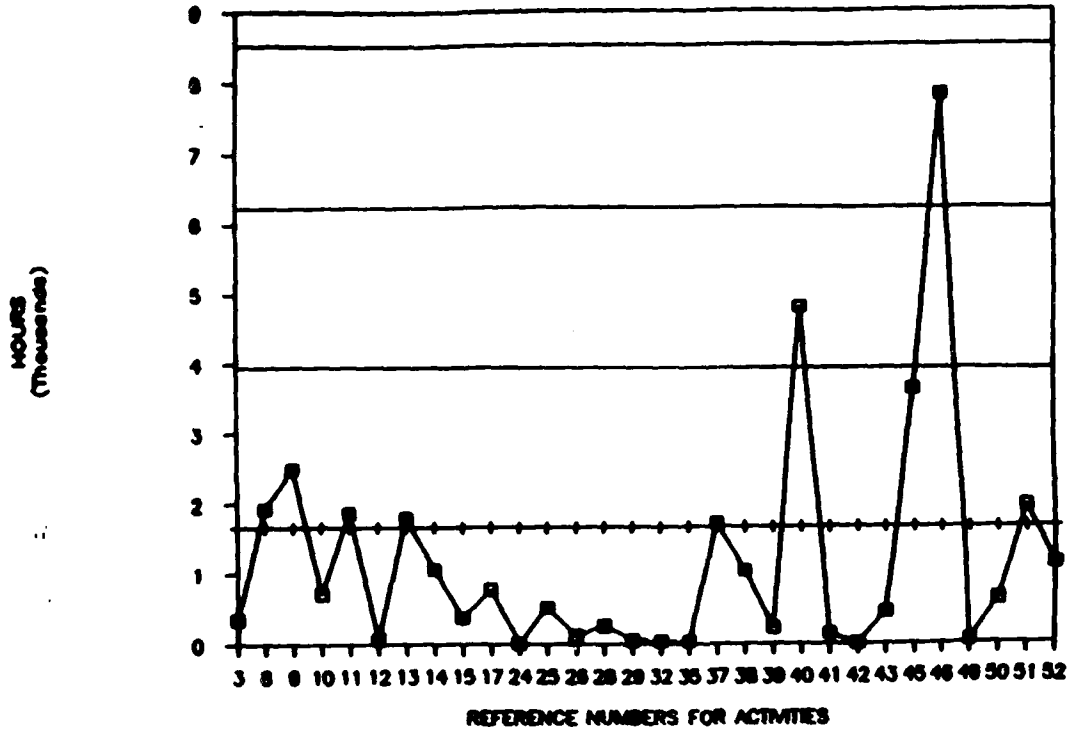


FIGURE A-14

OPERATIONS HOURS USED

PART 1

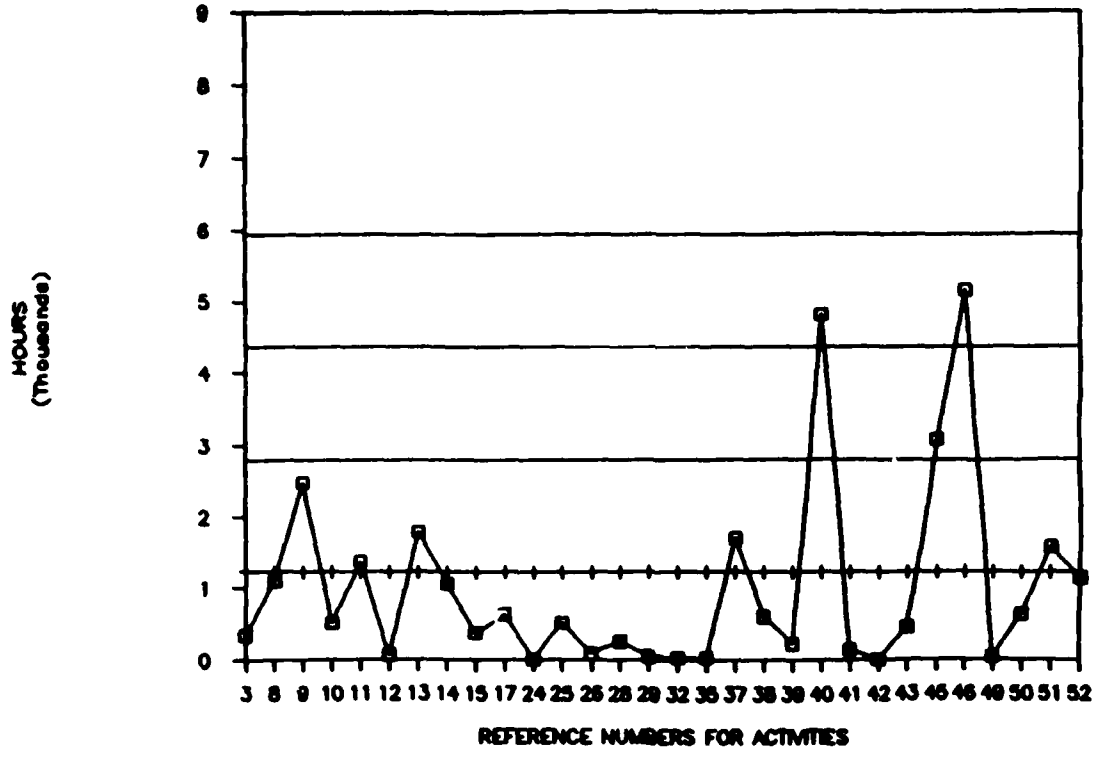


FIGURE A-15

OPERATIONS HOURS REQUIRED

PART 2

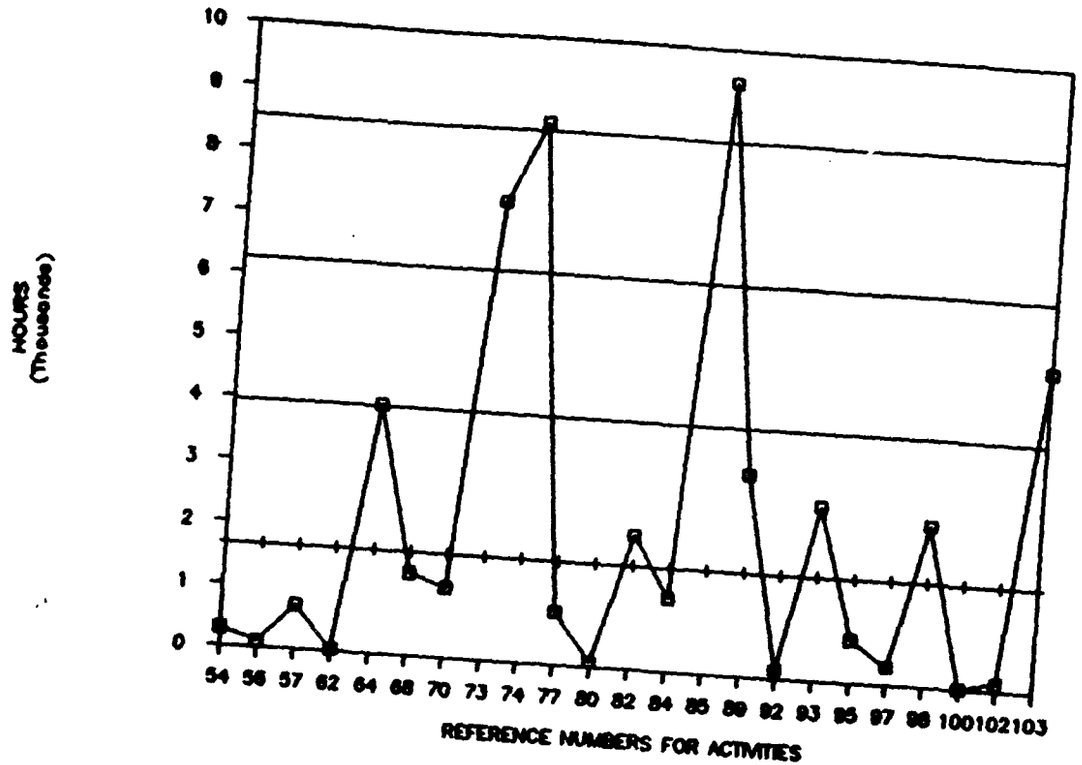
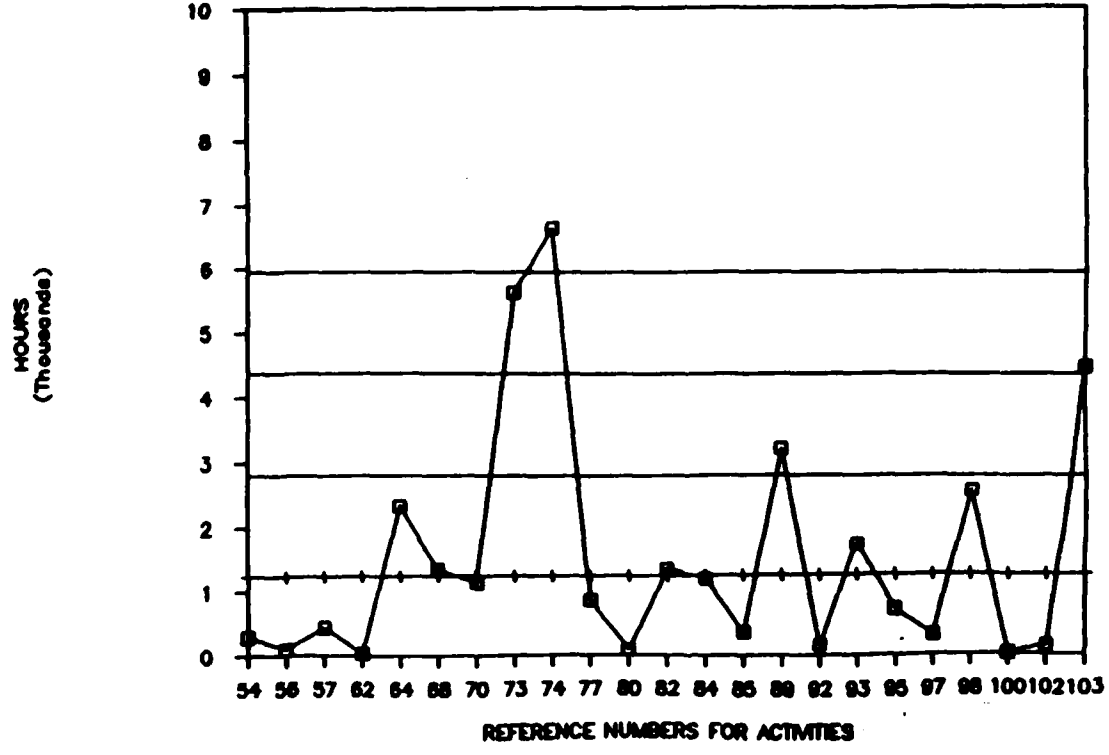


FIGURE A-16

OPERATIONS HOURS USED

PART 2



APPENDIX B

LISTINGS OF INSTALLATIONS RESPONDING TO THE
AMC RADIATION SAFETY PERSONNEL SURVEY - 1984

FEBRUARY 28, 1986

FOREWORD

This appendix contains an alphabetical listing of AMC installations that were requested to fill out questionnaires starting at page B-1. A listing based upon assigned unique numbers is provided beginning at page B-13. The unique numbers are in ascending order. This numerical listing should be used to identify installations referenced in Figure 3-1, Figure 3-2, and appendix A. Three consecutive pages are required to provide all data related to a specific installation. The first page provides the name and the unique reference number. The second consecutive page in the list provides the address, attention numbers and the unique reference number to allow easy correlation. The third and last consecutive page provides a point of contact, mail code and telephone along with the unique reference number. The numerically ordered list provides the same information.

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

INSTALLATION NAMES	REF. #
AMCCOM-ARDC	63
ARDC SAFETY OFFICE	64
ARMY MATERIALS AND MECHANICS RESEARCH CENTER	51
ARMY SPT. ACTIVITY	81
ATMOSPHERIC SCIENCES LABORATORY, WSMR, NM	72
BADGER ARMY AMMUNITION PLANT	100
CHEMICAL RESEARCH AND DEVELOPMENT CENTER	40
CHIEF, U.S. ARMY LOGISTIC ASSISTANCE OFFICE - FORSCOM	21
CRANE ARMY AMMUNITION ACTIVITY	28
ELECTRONIC WARFARE	1
EXECUTIVE OFFICE, DARCOM-EUROPE	75
FORT HUACHUCA ELECTRONIC PROVING GROUND	10
H.Q. AMCCOM	23
H.Q. LEXINGTON-BLUE GRASS DEPOT ACTIVITY	37
H.Q. DARCOM-LAO EUROPE	76
H.Q. ERADCOM	41
H.Q. TOBYHANNA ARMY DEPOT	82
H.Q. U.S. ARMY AVIATION SYSTEMS COMMAND	57
H.Q. U.S. ARMY AVIATION SYSTEMS COMMAND (BLACK HAWK PROJECT)	58
H.Q. U.S. ARMY COMMUNICATIONS-ELECTRONICS COMMAND	65
H.Q. U.S. ARMY COMMUNICATIONS-ELECTRONICS COMMAND & FORT MONMOUTH	66
H.Q. U.S. ARMY DEPOT SYSTEMS COMMAND	101
H.Q. U.S. ARMY MISSILE COMMAND	4
H.Q. U.S. ARMY MISSILE COMMAND	5
H.Q. U.S. ARMY MISSILE COMMAND	6

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

ADDRESSES AND ATTENTION NUMBERS		REF. #
ARMAMENT RESEARCH AND DEVELOPMENT CENTER DOVER	DRSMC-SF (D)	63
ARDC SAFETY OFFICE PICATINNY ARSENAL, DOVER	DRSMC-SFD (D)	64
ARMY MATERIALS AND MECHANICS RESEARCH CENTER WATERTOWN	DRXMR-H	51
PHILADELPHIA		81
U.S. ARMY ATMOSPHEREIC SCIENCES LABORATORY WHITE SANDS MISSILE RANGE	DELAS-AR-P	72
BADGER ARMY AMMUNITION PLANT BARABOO	SMCBA-SF	100
CHEMICAL R & D CENTER (USA AMCCOM) ABERDEEN PROVING GROUND	DRSMC-CLF (A)	40
CHIEF, U.S. ARMY LOGISTIC ASSISTANCE OFFICE - FORSCOM FORT McPHERSON	DRXLA-FO	21
CRANE ARMY AMMUNITION ACTIVITY CRANE	SMCCN-QA	28
ELECTRONIC WELFARE	DRDEL-SS-H	1
EXECUTIVE OFFICE, DARCOM-EUROPE APO NEW YORK	DRXEU-CX	75
U.S. ARMY ELECTRONIC PROVING GROUND FORT HUACHUCA		10
H.Q. AMCCOM ROCK ISLAND	DRSMC-SF (R)	23
H.Q. LEXINGTON-BLUE GRASS DEPOT ACTIVITY LEXINGTON	SDSAN-LAS	37
H.Q. DARCOM-LAO EUROPE APO NEW YORK		76
H.Q. ERADCOM 2800 POWDER MILL RD., ADELPHI	DRDEL-SS	41
H.Q. TOBYHANNA ARMY DEPOT TOBYHANNA	SDSTO-AN	82
H.Q. U.S. ARMY AVIATION SYSTEMS COMMAND 4300 GOODFELLOW BOULEVARD, ST. LOUIS	DRSAV-X	57
H.Q. U.S. ARMY AVIATION SYSTEMS COMMAND (BLACK HAWK PROJECT) 4300 GOODFELLOW BOULEVARD, ST. LOUIS	DRCPM-BH-QP	58
H.Q. U.S. ARMY COMMUNICATIONS-ELECTRONICS COMMAND & FORT MONMOUTH FORT MONMOUTH	DRSEL-SEI-V	65
H.Q. U.S. ARMY COMMUNICATIONS-ELECTRONICS COMMAND & FORT MONMOUTH FORT MONMOUTH	DRSEL-ME-F	66
H.Q. U.S. ARMY DEPOT SYSTEMS COMMAND CHAMBERSBURG	DRSDS-T	101
H.Q. U.S. ARMY MISSILE COMMAND REDSTONE ARSENAL	DRCPM-HAER	4
H.Q. U.S. ARMY MISSILE COMMAND REDSTONE ARSENAL	DRCPM-RS	5
H.Q. U.S. ARMY MISSLE COMMAND REDSTONE ARSENAL	DRCPM-AMWS-T	6

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

		REF. #
STATE - NEW JERSEY	MAIL CODE - 07801	63
CONTACT - LLOYD E. COUGHLIN	TELE. - AV 880-2858	
STATE - NEW JERSEY	MAIL CODE - 07801	64
CONTACT - JAMES W. MCCAHILL	TELE. - AV 880-3126	
STATE - MASSACHUSETTS	MAIL CODE - 02172	51
CONTACT - W. LORENZEN	TELE. - AV 955-5225	
STATE - PENNSYLVANIA	MAIL CODE -	81
CONTACT -	TELE. -	
STATE - NEW MEXICO	MAIL CODE - 88002	72
CONTACT - IED BARBER	TELE. - AV 258-2542	
STATE - WISCONSIN	MAIL CODE - 53913	100
CONTACT - LOUIS P. HELLEWELL	TELE. - (608) 356-5525	
STATE - MARYLAND	MAIL CODE - 21010	40
CONTACT - P.M. EDWARDS	TELE. - AV 584-4411	
STATE - GEORGIA	MAIL CODE - 30330	21
CONTACT -	TELE. -	
STATE - INDIANA	MAIL CODE - 47522	28
CONTACT - SAMUEL R. CASWELL	TELE. - AV 482-1871	
STATE -	MAIL CODE -	1
CONTACT - SCOTT DAVIS	TELE. - AV 996-5292	
STATE - NEW YORK	MAIL CODE - 09333	75
CONTACT -	TELE. -	
STATE - ARIZONA	MAIL CODE - 85613	10
CONTACT - MR. LINDEN N. RANEY	TELE. - AV 879-6181	
STATE - ILLINOIS	MAIL CODE - 61299	23
CONTACT - RALPH A. CARDENUTO	TELE. - AV 793-2969	
STATE - KENTUCKY	MAIL CODE - 40511	37
CONTACT - BILL BABER	TELE. - AV 745-3544	
STATE - NEW YORK	MAIL CODE - 09333	76
CONTACT - SFC ISAAC LEONARD	TELE. - AV 370-8145	
STATE - MARYLAND	MAIL CODE - 20783	41
CONTACT - DAVID W. GRIFFIS	TELE. - AV 290-3446	
STATE - PENNSYLVANIA	MAIL CODE - 18466	82
CONTACT - ROLIN EDWARDS	TELE. - AV 795-7020	
STATE - MISSOURI	MAIL CODE - 63120	57
CONTACT - DENNIS R. CHAMBERS	TELE. - AV 693-1659	
STATE - MISSOURI	MAIL CODE - 63120	58
CONTACT -	TELE. -	
STATE - NEW JERSEY	MAIL CODE - 07703	65
CONTACT -	TELE. -	
STATE - NEW JERSEY	MAIL CODE - 07703	66
CONTACT -	TELE. -	
STATE - PENNSYLVANIA	MAIL CODE - 17201	101
CONTACT - JOHN E. RANKIN	TELE. - AV 238-7328	
STATE - ALABAMA	MAIL CODE - 35898	4
CONTACT - JAMES S. HINKLE	TELE. -	
STATE - ALABAMA	MAIL CODE - 35898	5
CONTACT - MALCOLM R. O'NEILL	TELE. -	
STATE - ALABAMA	MAIL CODE - 35898	6
CONTACT - JOE E. MITCHELL	TELE. -	

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

INSTALLATION NAME	REF. #
H.Q. U.S. ARMY SUPPORT ACTIVITY	83
H.Q. U.S. ARMY TEST AND EVALUATION COMMAND	42
H.Q. U.S. ARMY TROOP SUPPORT COMMAND	59
HARRY DIAMOND LABORATORIES	43
HAWTHORNE ARMY AMMUNITION PLANT	62
HOLSTON ARMY AMMUNITION PLANT	102
INDIANA ARMY AMMUNITION PLANT	29
IOWA ARMY AMMUNITION PLANT	30
JOINT MILITARY PACKAGING TRAINING CENTER	44
JOLIET ARMY AMMUNITION PLANT	24
KANSAS ARMY AMMUNITION PLANT	35
LETTERKENNY ARMY DEPOT SAFETY OFFICE	84
LIMA ARMY TANK PLANT	79
LONE STAR ARMY AMMUNITION PLANT	90
LOUISIANA ARMY AMMUNITION PLANT	39
MAINZ ARMY DEPOT	3
MILAN ARMY AMMUNITION PLANT	89
MISSISSIPPI ARMY AMMUNITION PLANT	56
MORTON THIOKOL INC.	92
McALESTER ARMY AMMUNITION PALNT	80
NEW CUMBERLAND ARMY DEPOT SAFETY OFFICE	85
NEWPORT ARMY AMMUNITION PLANT	31
NUCLEAR EFFECT DIVISION (HEALTH PHYSICS BRANCH)	73
OFFICE OF THE PROJECT MANAGER FOR TRAINING DEVICES	19
OFFICE OF THE PROJECT MANAGER, SGT. YORK AIR DEFENSE GUN SYSTEM	67

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

ADDRESSES AND ATTENTION NUMBERS

		REF. #
H.Q. U.S. ARMY SUPPORT ACTIVITY 2800 SOUTH 20th STREET, PHILADELPHIA	STRAP-P	83
H.Q. U.S. ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND	DRSTE-ST	42
H.Q. U.S. ARMY TROOP SUPPORT COMMAND 4300 GOODFELLOW BOULEVARD, ST. LOUIS	DRSAV-X	59
HARRY DIAMOND LABORATORIES 2800 POWDER MILL RD., ADELPHI	DELHD-SA	43
HAWTHORNE ARMY AMMUNITION PLANT HAWTHORNE	SMCHW-SE	62
HOLSTON ARMY AMMUNITION PLANT KINGSPORT	SMCHO-SE	102
INDIANA ARMY AMMUNITION PLANT CHARLESTOWN		29
IOWA ARMY AMMUNITION PLANT MIDDLETON	SMCIO-SE	30
JOINT MILITARY PACKAGING TRAINING CENTER ABERDEEN PROVING GROUND	DRXPT	44
JOLIET ARMY AMMUNITION PLANT JOLIET		24
KANSAS ARMY AMMUNITION PLANT EAST MAIN STREET, PARSONS		35
LETTERKENNY ARMY DEPOT CHAMBERSBURG	SDSLE-SS	84
LIMA ARMY TANK PLANT 1155 BUCKEYE ROAD, LIMA	DRCPM-GCM-UO	79
LONE STAR ARMY AMMUNITION PLANT TEXARKANA	SMCLS-SE	90
LOUISIANA ARMY AMMUNITION PLANT P.O. BOX 30058, SHREVEPORT	SMCLA-SE	39
MAINZ ARMY DEPOT AN DER BRUCHSPITZE 71		3
MILAN ARMY AMMUNITION PLANT. MILAN	SMCMI-SE	89
MISSISSIPPI ARMY AMMUNITION PLANT PICAYUNE	SMCMS-SE	56
MORTON THIOKOL INC. P.O. BOX 1149 , MARSHALL	SMCLO-SE	92
McALESTER ARMY AMMUNITION PLANT McALESTER		80
NEW CUMBERLAND ARMY DEPOT NEW CUMBERLAND	SDSNC-ASA	85
NEWPORT ARMY AMMUNITION PLANT P.O. BOX 121 NEWPORT	SMCNE-EN	31
U.S. ARMY WHITE SANDS MISSILE RANGE WHITE SANDS MISSILE RANGE	TE-N	73
OFFICE OF THE PROJECT MANAGER FOR TRAINING DEVICES NAVAL TRAINING CENTER, ORLANDO	DRCPM-TND-SP	19
OFFICE OF THE PROJECT MANAGER, SGT. YORK AIR DEFENSE GUN SYSTEM DOVER	DRCPM-ADG-C (D)	67

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

		REF. #
STATE - PENNSYLVANIA	MAIL CODE - 19101	83
CONTACT -	TELE. -	
STATE - MARYLAND	MAIL CODE - 21005	42
CONTACT - JOHN E. STARKEY	TELE. - AV 283-5147	
STATE - MISSOURI	MAIL CODE - 63120	59
CONTACT - DENNIS R. CHAMBERS	TELE. - AV 693-1659	
STATE - MARYLAND	MAIL CODE - 20783	43
CONTACT - MICHAEL BORISKY	TELE. - AV 290-2218	
STATE - NEVADA	MAIL CODE - 89416	62
CONTACT - LORIN D. IRELAND	TELE. - AV 830-7404	
STATE - TENNESSEE	MAIL CODE - 37660	102
CONTACT - RICHARD A. JEWELL	TELE. - (615)-247-9111	
STATE - INDIANA	MAIL CODE - 47111	29
CONTACT - R.J. PONTRICH	TELE. - (812) 282-8961	
STATE - INDIANA	MAIL CODE - 52638	30
CONTACT - PAUL CROSS	TELE. - (319) 753-7434	
STATE - MARYLAND	MAIL CODE - 21005	44
CONTACT -	TELE. -	
STATE - ILLINOIS	MAIL CODE - 60436	24
CONTACT - THOMAS L. ERDMAN	TELE. - (814) 424-2906	
STATE - KANSAS	MAIL CODE - 67357	35
CONTACT - LARRY L. WETHERELL	TELE. - AV 956-1528	
STATE - PENNSYLVANIA	MAIL CODE - 17201	84
CONTACT - RICHARD A. LARSON	TELE. - AV 238-6646	
STATE - OHIO	MAIL CODE - 45804	79
CONTACT - WILLIAM V. CRADY	TELE. - AV 786-6223	
STATE - TEXAS	MAIL CODE - 75501	90
CONTACT - TRACY K. BRAMLETT	TELE. - AV 829-1812	
STATE - LOUISIANA	MAIL CODE - 71130	39
CONTACT - JIM MANN	TELE. - (318) 459-5177	
STATE - 6500 MAINZ GERMANY	MAIL CODE -	3
CONTACT - GERD ZEILER	TELE. - 06131/696-462	
STATE - TENNESSEE	MAIL CODE - 38258	89
CONTACT - W.E. HOLMES	TELE. - AV 966-6936	
STATE - MISSISSIPPI	MAIL CODE - 39466	56
CONTACT - JOHN HAINES	TELE. - (601) 467-8610	
STATE - TEXAS	MAIL CODE - 75671	92
CONTACT - JOSEPH L. COOPER	TELE. - AV 956-2126	
STATE - OKLAHOMA	MAIL CODE - 74501	80
CONTACT - LEE V. MAXWELL	TELE. - AV 956-6433	
STATE - PENNSYLVANIA	MAIL CODE - 17070	85
CONTACT - DAVID C. WILF	TELE. - AV 977-6116	
STATE - INDIANA	MAIL CODE - 47966	31
CONTACT - G.E. SOCKWELL, JR.	TELE. - AV 634-1592	
STATE - NEW MEXICO	MAIL CODE - 88002	73
CONTACT - DON J. WHITE	TELE. - AV 258-1167	
STATE - FLORIDA	MAIL CODE - 32813	19
CONTACT -	TELE. -	
STATE - NEW JERSEY	MAIL CODE - 07801	67
CONTACT -	TELE. -	

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

INSTALLATION NAME	REF. #
PROJECT MANAGER, ADVANCED SCOUT HELICOPTER	60
PUEBLO DEPOT ACTIVITY	17
RADFORD ARMY AMMUNITION PLANT	97
RADIATION PROTECTION OFFICE (WHITE SANDS MISSILE RANGE)	74
RED RIVER ARMY DEPOT	93
ROCK ISLAND ARSENAL	25
ROCKY MOUNTAIN ARSENAL	18
SACRAMENTO ARMY DEPOT	13
SAFETY OFFICE (ABERDEEN PROVING GROUND)	45
SAVANNA ARMY DEPOT ACTIVITY	26
SHARPE ARMY DEPOT	14
SIERRA ARMY DEPOT SAFETY OFFICE	15
SUNFLOWER ARMY AMMUNITION PLANT	36
TACOM-PM OFFICE	2
TELEVISION-AUDIO SUPPORT ACTIVITY, SACRAMENTO ARMY DEPOT	16
TOOELE ARMY DEPOT	95
TWIN CITIES ARMY AMMUNITION PLANT (HONEYWELL AND 3M)	55
U.S. ARMY AVIATION DEVELOPMENT TEST ACTIVITY	7
U.S. ARMY BALLISTIC RESEARCH LABORATORY	46
U.S. ARMY BELVOIR R & D CENTER	98
U.S. ARMY CENTRAL AMMUNITION MANAGEMENT OFFICE (PACIFIC)	22
U.S. ARMY COLD REGIONS TEST CENTER (FORT GREELY, ALASKA)	99
U.S. ARMY COMMUNICATIONS-ELECTRONICS COMMAND (CECOM)	68
U.S. ARMY DARCOM AUTOMATED LOGISTICS MANAGEMENT SYSTEMS ACTIVITY	61
U.S. ARMY DARCOM CATALOG DATA ACTIVITY	86

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

ADDRESSES AND ATTENTION NUMBERS		REF. #
PROJECT MANAGER, ADVANCED SCOUT HELICOPTER 4300 GOODFELLOW BOULEVARD, ST. LOUIS	DRCPM-ASH-T	60
PUEBLO DEPOT ACTIVITY PUEBLO	SDSTE-PUA-SA	17
RADFORD ARMY AMMUNITION PLANT P.O. BOX 2, RADFORD	SMCRA-SF	97
U.S. ARMY WHITE SANDS MISSILE RANGE WHITE SANDS MISSILE RANGE	STEWS-ME-SE	74
RED RIVER ARMY DEPOT TEXARKANA	SDSRR-AF	93
ROCK ISLAND ARSENAL ROCK ISLAND	DRSAR-SF	25
ROCKY MOUNTAIN ARSENAL COMMERCE CITY	SMCRM-SF	18
COMMANDER, SAAD SACRAMENTO	SDSSA-ASD	13
SAFETY OFFICE (ABERDEEN PROVING GROUND) ABERDEEN PROVING GROUND	STEAP-SA	45
U.S. ARMY DEFENSE AMMUNITION CENTER SAVANNA	SMCAC-DEV	26
SHARPE ARMY DEPOT LATHROP	SDSSH-ASD	14
SIERRA ARMY DEPOT HERLONG	SDSSI-S	15
SUNFLOWER ARMY AMMUNITION PLANT P.O. BOX 640, DESOTO	SMCSU	36
TACOM-PM OFFICE	IRC-PM-IVH	2
TELEVISION-AUDIO SUPPORT ACTIVITY, SACRAMENTO ARMY DEPOT SACRAMENTO	SELTV-D-1	16
TOOELE ARMY DEPOT TOOELE	SDSTE-SAF	95
TWIN CITIES ARMY AMMUNITION PLANT NEW BRIGHTON	SMCTC-EN	55
U.S. ARMY AVIATION DEVELOPMENT TEST ACTIVITY FORT RUCKER	STEBG-SA	7
U.S. ARMY BALLISTIC RESEARCH LABORATORY ABERDEEN PROVING GROUND	DRXBR-SF	46
U.S. ARMY BELVOIR R & D CENTER FORT BELVOIR	STRBE-VR	98
U.S. ARMY CENTRAL AMMUNITION MANAGEMENT OFFICE (PACIFIC) FORT SHAFTER	SMCCA-PL	22
U.S. ARMY COLD REGIONS TEST CENTER APO SEATTLE	STECR-AD-S	99
U.S. ARMY COMMUNICATIONS-ELECTRONICS COMMAND FORT MONMOUTH	DRSEL-SF-MR	63
U.S. ARMY DARCOM AUTOMATED LOGISTICS MANAGEMENT SYSTEMS ACTIVITY P.O. BOX 1578, ST. LOUIS	DRXAL-RAG	61
U.S. ARMY DARCOM CATALOG DATA ACTIVITY NEW CUMBERLAND ARMY DEPOT, NEW CUMBERLAND	DRXCA-PP	86

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

		REF. #
STATE - MISSOURI	MAIL CODE - 63120	60
CONTACT -	TELE. -	
STATE - COLORADO	MAIL CODE - 81001	17
CONTACT - SSG GLENN S. WOODARD	TELE. - AV 877-4980	
STATE - VIRGINIA	MAIL CODE - 24141	97
CONTACT - DOUGLAS M. DAY	TELE. - (703) 639-8705	
STATE - NEW MEXICO	MAIL CODE - 88002	74
CONTACT - GEORGE R. WENZ	TELE. - AV 258-1019	
STATE - TEXAS	MAIL CODE - 75507	93
CONTACT - WARREN D. GRAEF, JR.	TELE. - AV 829-2371	
STATE - ILLINOIS	MAIL CODE - 61299	25
CONTACT - BILL GALLAND	TELE. -	
STATE - COLORADO	MAIL CODE - 80022	18
CONTACT - RICHARD M. KEFFER	TELE. - A 556-2338	
STATE - CALIFORNIA	MAIL CODE - 95813	13
CONTACT - W. MARTIN CAIN	TELE. - AV 839-3385	
STATE - MARYLAND	MAIL CODE - 21005	45
CONTACT - DAL M. NETT	TELE. - AV 283-3898	
STATE - ILLINOIS	MAIL CODE - 61074	26
CONTACT - DONALD S. NEHRKORN	TELE. - AV 585-8988	
STATE - CALIFORNIA	MAIL CODE - 95331	14
CONTACT - EUGENE P. EARNEST	TELE. - AV 462-2169	
STATE - CALIFORNIA	MAIL CODE - 96113	15
CONTACT - ROBERT M. OAKES	TELE. - AV 830-0404	
STATE - KANSAS	MAIL CODE - 66018	36
CONTACT - C.L. JARRETT	TELE. - AV 720-6824	
STATE -	MAIL CODE -	2
CONTACT - DON BLAKE	TELE. -	
STATE - CALIFORNIA	MAIL CODE - 95813	16
CONTACT -	TELE. -	
STATE - UTAH	MAIL CODE - 84074	95
CONTACT - GAIL H. CHRISTIANSEN	TELE. - AV 790-2713	
STATE - MINNESOTA	MAIL CODE - 55112	55
CONTACT - N/A	TELE. - N/A	
STATE - ALABAMA	MAIL CODE - 36362	7
CONTACT - JAMES K. MABREY	TELE. -	
STATE - MARYLAND	MAIL CODE - 21911	46
CONTACT - RICHARD A. MARKLAND	TELE. - AV 283-6354	
STATE - VIRGINIA	MAIL CODE - 22060	98
CONTACT -	TELE. - AV 334-5437	
STATE - HAWAII	MAIL CODE - 96858	22
CONTACT -	TELE. -	
STATE - WASHINGTON	MAIL CODE - 98733	99
CONTACT - SSG WILLIAM E. MARTIN	TELE. - AV 872-3291	
STATE - NEW JERSEY	MAIL CODE - 07703	68
CONTACT - JOSEPH M. SANTARSIERO	TELE. - AV 995-4427	
STATE - MISSOURI	MAIL CODE - 63188	61
CONTACT -	TELE. -	
STATE - PENNSYLVANIA	MAIL CODE - 17070	86
CONTACT -	TELE. -	

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

INSTALLATION NAME	REF #
U.S. ARMY DUGWAY PROVING GROUND	96
U.S. ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND	69
U.S. ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND	70
U.S. ARMY GENERAL MATERIEL AND PETROLEUM ACTIVITY	87
U.S. ARMY HUMAN ENGINEERING LABORATORY	47
U.S. ARMY IONIZING RADIATION DOSIMETRY CENTER	38
U.S. ARMY JEFFERSON PROVING GROUND	32
U.S. ARMY MANAGEMENT ENGINEERING TRAINING ACTIVITY	27
U.S. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND	33
U.S. ARMY MATERIEL SYSTEMS ANALYSIS ACTIVITY	48
U.S. ARMY MISSLE COMMAND (REDSTONE ARSENAL)	8
U.S. ARMY MUNITIONS PRODUCTION BASE MODERNIZATION AGENCY	71
U.S. ARMY NATICK R & D CENTER	52
U.S. ARMY PINE BLUFF ARSENAL / SAFETY OFFICE	12
U.S. ARMY PLANT REP. OFFICE (AVRADCOM), BELL HELICOPTER TEXTRON	94
U.S. ARMY PLANT REP. OFFICE, BOEING VERTOL COMPANY	88
U.S. ARMY RESEARCH OFFICE	78
U.S. ARMY TANK-AUTOMOTIVE COMMAND	53
U.S. ARMY TANK-AUTOMOTIVE COMMAND	54
U.S. ARMY TECHNICAL ESCORT UNIT	49
U.S. ARMY TMDE SUPPORT GROUP	9
U.S. ARMY TOXIC AND HAZARDOUS MATERIAL AGENCY	50
U.S. ARMY TROPIC TEST CENTER	20
U.S. ARMY YUMA PROVING GROUND / SAFETY OFFICE	11
WATERVLIET ARSENAL	77

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

ADDRESSES AND ATTENTION NUMBERS		REF. #
U.S. ARMY DUGWAY PROVING GROUND DUGWAY	STEDP-SA	96
U.S. ARMY ELECTRONICS R & D COMMAND (FIREFINDER / REMBASS) FORT MONMOUTH	DRCPM-FFR-TM	69
U.S. ARMY ELECTRONICS R & D COMMAND FORT MONMOUTH	DRDEL-SS-H	70
U.S. ARMY GENERAL MATERIEL AND PETROLEUM ACTIVITY NEW CUMBERLAND ARMY DEPOT, NEW CUMBERLAND	STRGP-M	87
U.S. ARMY HUMAN ENGINEERING LABORATORY ABERDEEN PROVING GROUND	DRXHE-SD	47
U.S. ARMY IONIZING RADIATION DOSIMETRY CENTER LEXINGTON	DRXTM-CI-DC	38
U.S. ARMY JEFFERSON PROVING GROUND MADISON	STEJP-TD-D	32
U.S. ARMY MANAGEMENT ENGINEERING TRAINING ACTIVITY ROCK ISLAND	DRXOM-PM	27
U.S. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND CHARLESTOWN	DRXOS-PE	33
U.S. ARMY MATERIEL SYSTEMS ANALYSIS ACTIVITY ABERDEEN PROVING GROUND	DRXSY-P	48
U.S. ARMY MISSLE COMMAND REDSTONE ARSENAL	DRSMI-XO	8
U.S. ARMY MUNITIONS PRODUCTION BASE MODERIZATION AGENCY DOVER	SMCPM-PBM-TP	71
U.S. ARMY NATICK R & D CENTER NATICK	STRNC-Z	52
PINE BLUFF ARSENAL PINE BLUFF		12
U.S. ARMY PLANT REP. OFFICE (AVRADCOM), BELL HELICOPTER TEXTRON P.O. BOX 1605, FORT WORTH	SAVBE-CO	94
U.S. ARMY PLANT REP. OFFICE, BOEING VERTOL COMPANY P.O. BOX 16859, PHILADELPHIA	SAVBV-IS	88
U.S. ARMY RESEARCH OFFICE P.O. BOX 12211, RESEARCH TRIANGLE PARK	DRXRO-AO	78
U.S. ARMY TANK-AUTOMOTIVE COMMAND SELFRIDGE AIR NATIONAL GUARD BASE	DRSTA-XYR	53
U.S. ARMY TANK-AUTOMOTIVE COMMAND WARREN	DRSTA-CZ	54
U.S. ARMY TECHNICAL ESCORT UNIT ABERDEEN PROVING GROUND	SMCTE-SS	49
U.S. ARMY TMDE SUPPORT GROUP REDSTONE ARSENAL	DRXTM-X	9
U.S. ARMY TOXIC AND HAZARDOUS MATERIAL AGENCY ABERDEEN PROVING GROUND	DRXTH-FS	50
U.S. ARMY TROPIC TEST CENTER PO DRAWER 942 APO MIAMI	STETC-MTD-I	20
U.S. ARMY YUMA PROVING GROUND YUMA	STEYP-SAF	11
WATERVLIET ARSENAL WATERVLIET	DRSMC-LCB-RP	77

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

		REF #
STATE - UTAH	MAIL CODE - 84022	96
CONTACT -	TELE. -	
STATE - NEW JERSEY	MAIL CODE - 07703	69
CONTACT -	TELE. -	
STATE - NEW JERSEY	MAIL CODE - 07703	70
CONTACT - ANTHONY S. KIRKWOOD	TELE. - AV 996-5292	
STATE - PENNSYLVANIA	MAIL CODE - 17070	87
CONTACT -	TELE. -	
STATE - MARYLAND	MAIL CODE -	47
CONTACT - ELMER A. DIETER	TELE. - AV 283-5906	
STATE - KENTUCKY	MAIL CODE - 40511	38
CONTACT - A. EDWARD ABNEY	TELE. - AV 745-3646	
STATE - INDIANA	MAIL CODE - 47250	32
CONTACT - DR. N.I. WYKOFF	TELE. - AV 480-7251	
STATE - ILLINOIS	MAIL CODE - 61299	27
CONTACT -	TELE. -	
STATE - INDIANA	MAIL CODE - 47111	33
CONTACT - C.J. CAMPBELL	TELE. - AV 366-7418	
STATE - MARYLAND	MAIL CODE - 21005	48
CONTACT -	TELE. -	
STATE - ALABAMA	MAIL CODE - 35898	8
CONTACT - FREDRICK A. FELD	TELE. - AV 746-8136	
STATE - NEW JERSEY	MAIL CODE - 07801	71
CONTACT -	TELE. -	
STATE - MASSACHUSETTS	MAIL CODE - 01760	52
CONTACT - THOMAS G. MARTIN III	TELE. - AV 256-5208	
STATE - ARKANSAS	MAIL CODE - 71611	12
CONTACT - ROGGER D. STEVENS	TELE. - AV 966-3048	
STATE - TEXAS	MAIL CODE - 76101	94
CONTACT -	TELE. -	
STATE - PENNSYLVANIA	MAIL CODE - 19142	88
CONTACT -	TELE. -	
STATE - NORTH CAROLINA	MAIL CODE - 27709	78
CONTACT -	TELE. -	
STATE - MICHIGAN	MAIL CODE - 48045	53
CONTACT -	TELE. -	
STATE - MICHIGAN	MAIL CODE - 48090	54
CONTACT - JOHN DOLLBERG	TELE. - AV 786-8529	
STATE - MARYLAND	MAIL CODE - 21010	49
CONTACT - CPT WAYMAN C. BENFORD	TELE. - AV 584-4381	
STATE - ALABAMA	MAIL CODE - 35898	9
CONTACT - DEL LONEY	TELE. - AV 746-5042	
STATE - MARYLAND	MAIL CODE - 21010	50
CONTACT - ANDREW P. BLASCO	TELE. - AV 584-3325	
STATE - FLORIDA	MAIL CODE - 34004	20
CONTACT - CPT RICHARD H. MCINTOSH	TELE. - AV 285-4355	
STATE - ARIZONA	MAIL CODE - 85365	1
CONTACT - ED MAIZKANIN	TELE. - AV 899-2618	
STATE - NEW YORK	MAIL CODE - 12189	7
CONTACT - JAMES J. MALINSKI	TELE. - AV 974-5016	

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

INSTALLATION NAMES	REF. #
ELECTRONIC WARFARE	1
TACOM-PM OFFICE	2
MAINZ ARMY DEPOT	3
H.Q. U.S. ARMY MISSILE COMMAND	4
H.Q. U.S. ARMY MISSILE COMMAND	5
H.Q. U.S. ARMY MISSILE COMMAND	6
U.S. ARMY AVIATION DEVELOPMENT TEST ACTIVITY	7
U.S. ARMY MISSLE COMMAND (REDSTONE ARSENAL)	8
U.S. ARMY TMDE SUPPORT GROUP	9
FORT HUACHUCA ELECTRONIC PROVING GROUND	10
U.S. ARMY YUMA PROVING GROUND / SAFETY OFFICE	11
U.S. ARMY PINE BLUFF ARSENAL / SAFETY OFFICE	12
SACRAMENTO ARMY DEPOT	13
SHARPE ARMY DEPOT	14
SIERRA ARMY DEPOT SAFETY OFFICE	15
TELEVISION-AUDIO SUPPORT ACTIVITY, SACRAMENTO ARMY DEPOT	16
PUEBLO DEPOT ACTIVITY	17
ROCKY MOUNTAIN ARSENAL	18
OFFICE OF THE PROJECT MANAGER FOR TRAINING DEVICES	19
U.S. ARMY TROPIC TEST CENTER	20
CHIEF, U.S. ARMY LOGISTIC ASSISTANCE OFFICE - FORSCOM	21
U.S. ARMY CENTRAL AMMUNITION MANAGEMENT OFFICE (PACIFIC)	22
H.Q. AMCCOM	23
JOLIET ARMY AMMUNITION PLANT	24
ROCK ISLAND ARSENAL	25

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

ADDRESSES AND ATTENTION NUMBERS		REF. #
ELECTRONIC WELFARE	DRDEI-SS-H	1
TACOM-PM OFFICE	TRC-PM-TVH	2
MAINZ ARMY DEPOT AN DER BRUCHSPITZE 71		3
H.Q. U.S. ARMY MISSILE COMMAND REDSTONE ARSENAL	DRCPM-HAFR	4
H.Q. U.S. ARMY MISSILE COMMAND REDSTONE ARSENAL	DRCPM-RS	5
H.Q. U.S. ARMY MISSLE COMMAND REDSTONE ARSENAL	DRCPM-AMWS-T	6
U.S. ARMY AVIATION DEVELOPMENT TEST ACTIVITY FORT RUCKER	STEBG-SA	7
U.S. ARMY MISSLE COMMAND REDSTONE ARSENAL	DRSMI-XO	8
U.S. ARMY TMDE SUPPORT GROUP REDSTONE ARSENAL	DRXTM-X	9
U.S. ARMY ELECTRONIC PROVING GROUND FORT HUACHUCA		10
U.S. ARMY YUMA PROVING GROUND YUMA	STEYP-SAF	11
PINE BLUFF ARSENAL PINE BLUFF		12
COMMANDER, SAAD SACRAMENTO	SDSSA-ASO	13
SHARPE ARMY DEPOT LATHROP	SDSSH-ASD	14
SIERRA ARMY DEPOT HERLONG	SDSSI-S	15
TELEVISION-AUDIO SUPPORT ACTIVITY, SACRAMENTO ARMY DEPOT SACRAMENTO	SELTV-D-1	16
PUEBLO DEPOT ACTIVITY PUEBLO	SDSTE-PUA-SA	17
ROCKY MOUNTAIN ARSENAL COMMERCE CITY	SMCRM-SF	18
OFFICE OF THE PROJECT MANAGER FOR TRAINING DEVICES NAVAL TRAINING CENTER, ORLANDO	DRCPM-TND-SP	19
U.S. ARMY TROPIC TEST CENTER PO DRAWER 942 APO MIAMI	STETC-MTD-T	20
CHIEF, U.S. ARMY LOGISTIC ASSISTANCE OFFICE - FORSCOM FORT McPHERSON	DRXLA-FO	21
U.S. ARMY CENTRAL AMMUNITION MANAGEMENT OFFICE (PACIFIC) FORT SHAFTER	SMCCA-PL	22
H.Q. AMCCOM ROCK ISLAND	DRSMC-SF (R)	23
JOLIET ARMY AMMUNITION PLANT JOLIET		24
ROCK ISLAND ARSENAL ROCK ISLAND	DRSAR-SF	25

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

		REF. #
STATE -	MAIL CODE -	1
CONTACT - SCOTT DAVIS	TELE. - AV 996-5292	
STATE -	MAIL CODE -	2
CONTACT - DON BLAKE	TELE. -	
STATE - 6500 MAINZ GERMANY	MAIL CODE -	3
CONTACT - GERD ZEILER	TELE. - 06131/696-462	
STATE - ALABAMA	MAIL CODE - 35898	4
CONTACT - JAMES S. HINKLE	TELE. -	
STATE - ALABAMA	MAIL CODE - 35898	5
CONTACT - MALCOLM R. O'NEILL	TELE. -	
STATE - ALABAMA	MAIL CODE - 35898	6
CONTACT - JOE E. MITCHELL	TELE. -	
STATE - ALABAMA	MAIL CODE - 36362	7
CONTACT - JAMES K. MABREY	TELE. -	
STATE - ALABAMA	MAIL CODE - 35898	8
CONTACT - FREDRICK A. FELD	TELE. - AV 746-8136	
STATE - ALABAMA	MAIL CODE - 35898	9
CONTACT - DEL LONEY	TELE. - AV 746-5042	
STATE - ARIZONA	MAIL CODE - 85613	10
CONTACT - MR. LINDEN N. RANEY	TELE. - AV 879-6181	
STATE - ARIZONA	MAIL CODE - 85365	11
CONTACT - ED MATZKANIN	TELE. - AV 899-2618	
STATE - ARKANSAS	MAIL CODE - 71611	12
CONTACT - RODGER D. STEVENS	TELE. - AV 966-3048	
STATE - CALIFORNIA	MAIL CODE - 95813	13
CONTACT - W. MARTIN CAIN	TELE. - AV 839-3385	
STATE - CALIFORNIA	MAIL CODE - 95331	14
CONTACT - EUGENE P. EARNEST	TELE. - AV 462-2169	
STATE - CALIFORNIA	MAIL CODE - 96113	15
CONTACT - ROBERT M. OAKES	TELE. - AV 830-0404	
STATE - CALIFORNIA	MAIL CODE - 95813	16
CONTACT -	TELE. -	
STATE - COLORADO	MAIL CODE - 81001	17
CONTACT - SSG GLENN S. WOODARD	TELE. - AV 877-4980	
STATE - COLORADO	MAIL CODE - 80022	18
CONTACT - RICHARD M. KEFFER	TELE. - A 556-2338	
STATE - FLORIDA	MAIL CODE - 32813	19
CONTACT -	TELE. -	
STATE - FLORIDA	MAIL CODE - 34004	20
CONTACT - CPT RICHARD H. MCINTOSH	TELE. - AV 285-4355	
STATE - GEORGIA	MAIL CODE - 30330	21
CONTACT -	TELE. -	
STATE - HAWAII	MAIL CODE - 96858	22
CONTACT -	TELE. -	
STATE - ILLINOIS	MAIL CODE - 61299	23
CONTACT - RALPH A. CARDENUTO	TELE. - AV 793-2969	
STATE - ILLINOIS	MAIL CODE - 60436	24
CONTACT - THOMAS L. ERDMAN	TELE. - (814) 424-2906	
STATE - ILLINOIS	MAIL CODE - 61299	25
CONTACT - BILL GALLAND	TELE. -	

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

INSTALLATION NAMES	REF. #
SAVANNA ARMY DEPOT ACTIVITY	26
U.S. ARMY MANAGEMENT ENGINEERING TRAINING ACTIVITY	27
CRANE ARMY AMMUNITION ACTIVITY	28
INDIANA ARMY AMMUNITION PLANT	29
IOWA ARMY AMMUNITION PLANT	30
NEWPORT ARMY AMMUNITION PLANT	31
U.S. ARMY JEFFERSON PROVING GROUND	32
U.S. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND	33
KANSAS ARMY AMMUNITION PLANT	35
SUNFLOWER ARMY AMMUNITION PLANT	36
H.Q. LEXINGTON-BLUE GRASS DEPOT ACTIVITY	37
U.S. ARMY IONIZING RADIATION DOSIMETRY CENTER	38
LOUISIANA ARMY AMMUNITION PLANT	39
CHEMICAL RESEARCH AND DEVELOPMENT CENTER	40
H.Q. ERADCOM	41
H.Q. U.S. ARMY TEST AND EVALUATION COMMAND	42
HARRY DIAMOND LABORATORIES	43
JOINT MILITARY PACKAGING TRAINING CENTER	44
SAFETY OFFICE (ABERDEEN PROVING GROUND)	45
U.S. ARMY BALLISTIC RESEARCH LABORATORY	46
U.S. ARMY HUMAN ENGINEERING LABORATORY	47
U.S. ARMY MATERIEL SYSTEMS ANALYSIS ACTIVITY	48
U.S. ARMY TECHNICAL ESCORT UNIT	49
U.S. ARMY TOXIC AND HAZARDOUS MATERIAL AGENCY	50
ARMY MATERIALS AND MECHANICS RESEARCH CENTER	51

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

ADDRESSES AND ATTENTION NUMBERS		REF. #
U.S. ARMY DEFENSE AMMUNITION CENTER SAVANNA	SMCAC-DEV	26
U.S. ARMY MANAGEMENT ENGINEERING TRAINING ACTIVITY ROCK ISLAND	DRXOM-PM	27
CRANE ARMY AMMUNITION ACTIVITY CRANE	SMCCN-QA	28
INDIANA ARMY AMMUNITION PLANT CHARLESTOWN		29
IOWA ARMY AMMUNITION PLANT MIDDLETON	SMCIO-SF	30
NEWPORT ARMY AMMUNITION PLANT P.O. BOX 121 NEWPORT	SMCNE-EN	31
U.S. ARMY JEFFERSON PROVING GROUND MADISON	STEJP-TD-D	32
U.S. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND CHARLESTOWN	DRXOS-PE	33
KANSAS ARMY AMMUNITION PLANT EAST MAIN STREET, PARSONS		35
SUNFLOWER ARMY AMMUNITION PLANT P.O. BOX 640, DESOTO	SMCSU	36
H.Q. LEXINGTON-BLUE GRASS DEPOT ACTIVITY LEXINGTON	SDSAN-LAS	37
U.S. ARMY IONIZING RADIATION DOSIMETRY CENTER LEXINGTON	DRXTM-CI-DC	38
LOUISIANA ARMY AMMUNITION PLANT P.O. BOX 30058, SHREVEPORT	SMCLA-SF	39
CHEMICAL R & D CENTER (USA AMCCOM) ABERDEEN PROVING GROUND	DRSMC-CLF (A)	40
H.Q. ERADCOM 2800 POWDER MILL RD., ADELPHI	DRDEL-SS	41
H.Q. U.S. ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND	DRSTE-ST	42
HARRY DIAMOND LABORATORIES 2800 POWDER MILL RD., ADELPHI	DELHD-SA	43
JOINT MILITARY PACKAGING TRAINING CENTER ABERDEEN PROVING GROUND	DRXPT	44
SAFETY OFFICE (ABERDEEN PROVING GROUND) ABERDEEN PROVING GROUND	STEAP-SA	45
U.S. ARMY BALLISTIC RESEARCH LABORATORY ABERDEEN PROVING GROUND	DRXBR-SF	46
U.S. ARMY HUMAN ENGINEERING LABORATORY ABERDEEN PROVING GROUND	DRXHE-SD	47
U.S. ARMY MATERIEL SYSTEMS ANALYSIS ACTIVITY ABERDEEN PROVING GROUND	DRXSY-P	48
U.S. ARMY TECHNICAL ESCORT UNIT ABERDEEN PROVING GROUND	SMCTE-SS	49
U.S. ARMY TOXIC AND HAZARDOUS MATERIAL AGENCY ABERDEEN PROVING GROUND	DRXTH-ES	50
ARMY MATERIALS AND MECHANICS RESEARCH CENTER WATERTOWN	DRXMR-H	51

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

		REF. #
STATE - ILLINOIS	MAIL CODE - 61074	26
CONTACT - DONALD S. NEHRKORN	TELE. - AV 585-8988	
STATE - ILLINOIS	MAIL CODE - 61299	27
CONTACT -	TELE. -	
STATE - INDIANA	MAIL CODE - 47522	28
CONTACT - SAMUEL R. CASWELL	TELE. - AV 482-1871	
STATE - INDIANA	MAIL CODE - 47111	29
CONTACT - R.J. PONTRICH	TELE. - (812) 282-8961	
STATE - INDIANA	MAIL CODE - 52638	30
CONTACT - PAUL CROSS	TELE. - (319) 753-7434	
STATE - INDIANA	MAIL CODE - 47966	31
CONTACT - G.E. SOCKWELL, JR.	TELE. - AV 634-1592	
STATE - INDIANA	MAIL CODE - 47250	32
CONTACT - DR. N.L. WYKOFF	TELE. - AV 480-7251	
STATE - INDIANA	MAIL CODE - 47111	33
CONTACT - C.J. CAMPBELL	TELE. - AV 366-7418	
STATE - KANSAS	MAIL CODE - 67357	35
CONTACT - LARRY L. WETHERELL	TELE. - AV 956-1528	
STATE - KANSAS	MAIL CODE - 66018	36
CONTACT - C.L. JARRETT	TELE. - AV 720-6824	
STATE - KENTUCKY	MAIL CODE - 40511	37
CONTACT - BILL BABER	TELE. - AV 745-3544	
STATE - KENTUCKY	MAIL CODE - 40511	38
CONTACT - A. EDWARD ABNEY	TELE. - AV 745-3646	
STATE - LOUISIANA	MAIL CODE - 71130	39
CONTACT - JIM MANN	TELE. - (318) 459-5177	
STATE - MARYLAND	MAIL CODE - 21010	40
CONTACT - P.M. EDWARDS	TELE. - AV 584-4411	
STATE - MARYLAND	MAIL CODE - 20783	41
CONTACT - DAVID W. GRIFFIS	TELE. - AV 290-3446	
STATE - MARYLAND	MAIL CODE - 21005	42
CONTACT - JOHN E. STARKEY	TELE. - AV 283-5147	
STATE - MARYLAND	MAIL CODE - 20783	43
CONTACT - MICHAEL BORISKY	TELE. - AV 290-2218	
STATE - MARYLAND	MAIL CODE - 21005	44
CONTACT -	TELE. -	
STATE - MARYLAND	MAIL CODE - 21005	45
CONTACT - DAL M. NETT	TELE. - AV 283-3898	
STATE - MARYLAND	MAIL CODE - 21911	46
CONTACT - RICHARD A. MARKLAND	TELE. - AV 283-6354	
STATE - MARYLAND	MAIL CODE -	47
CONTACT - ELMER A. DIETER	TELE. - AV 283-5906	
STATE - MARYLAND	MAIL CODE - 21005	48
CONTACT -	TELE. -	
STATE - MARYLAND	MAIL CODE - 21010	49
CONTACT - CPT WAYMAN C. BENFORD	TELE. - AV 584-4381	
STATE - MARYLAND	MAIL CODE - 21010	50
CONTACT - ANDREW P. BLASCO	TELE. - AV 584-3325	
STATE - MASSACHUSETTS	MAIL CODE - 02172	51
CONTACT - W. LORENZEN	TELE. - AV 955-5225	

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

INSTALLATION NAMES	REF. #
U.S. ARMY NATICK R & D CENTER	52
U.S. ARMY TANK-AUTOMOTIVE COMMAND	53
U.S. ARMY TANK-AUTOMOTIVE COMMAND	54
TWIN CITIES ARMY AMMUNITION PLANT (HONEYWELL AND 3M)	55
MISSISSIPPI ARMY AMMUNITION PLANT	56
H.Q. U.S. ARMY AVIATION SYSTEMS COMMAND	57
H.Q. U.S. ARMY AVIATION SYSTEMS COMMAND (BLACK HAWK PROJECT)	58
H.Q. U.S. ARMY TROOP SUPPORT COMMAND	59
PROJECT MANAGER, ADVANCED SCOUT HELICOPTER	60
U.S. ARMY DARCOM AUTOMATED LOGISTICS MANAGEMENT SYSTEMS ACTIVITY	61
HAWTHORNE ARMY AMMUNITION PLANT	62
AMCCOM-ARDC	63
ARDC SAFETY OFFICE	64
H.Q. U.S. ARMY COMMUNICATIONS-ELECTRONICS COMMAND	65
H.Q. U.S. ARMY COMMUNICATIONS-ELECTRONICS COMMAND & FORT MONMOUTH	66
OFFICE OF THE PROJECT MANAGER, SGT. YORK AIR DEFENSE GUN SYSTEM	67
U.S. ARMY COMMUNICATIONS-ELECTRONICS COMMAND (CECOM)	68
U.S. ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND	69
U.S. ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND	70
U.S. ARMY MUNITIONS PRODUCTION BASE MODERNIZATION AGENCY	71
ATMOSPHERIC SCIENCES LABORATORY, WSMR, NM	72
NUCLEAR EFFECT DIVISION (HEALTH PHYSICS BRANCH)	73
RADIATION PROTECTION OFFICE (WHITE SANDS MISSILE RANGE)	74
EXECUTIVE OFFICE, DARCOM-EUROPE	75
H.Q. DARCOM-LAO EUROPE	76

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

ADDRESSES AND ATTENTION NUMBERS		REF. #
U.S. ARMY NATICK R & D CENTER NATICK	STRNC-Z	52
U.S. ARMY TANK-AUTOMOTIVE COMMAND SELFRIDGE AIR NATIONAL GUARD BASE	DRSTA-XYR	53
U.S. ARMY TANK-AUTOMOTIVE COMMAND WARREN	DRSTA-CZ	54
TWIN CITIES ARMY AMMUNITION PLANT NEW BRIGHTON	SMCTC-EN	55
MISSISSIPPI ARMY AMMUNITION PLANT PICAYUNE	SMCMS-SF	56
H.Q. U.S. ARMY AVIATION SYSTEMS COMMAND 4300 GOODFELLOW BOULEVARD, ST. LOUIS	DRSAV-X	57
H.Q. U.S. ARMY AVIATION SYSTEMS COMMAND (BLACK HAWK PROJECT) 4300 GOODFELLOW BOULEVARD, ST. LOUIS	DRCPM-BH-QP	58
H.Q. U.S. ARMY TROOP SUPPORT COMMAND 4300 GOODFELLOW BOULEVARD, ST. LOUIS	DRSAV-X	59
PROJECT MANAGER, ADVANCED SCOUT HELICOPTER 4300 GOODFELLOW BOULEVARD, ST. LOUIS	DRCPM-ASH-T	60
U.S. ARMY DARCOM AUTOMATED LOGISTICS MANAGEMENT SYSTEMS ACTIVITY P.O. BOX 1578, ST. LOUIS	DRXAL-RAG	61
HAWTHORNE ARMY AMMUNITION PLANT HAWTHORNE	SMCHW-SF	62
ARMAMENT RESEARCH AND DEVELOPMENT CENTER DOVER	DRSMC-SF (D)	63
ARDC SAFETY OFFICE PICATINNY ARSENAL, DOVER	DRSMC-SFD (D)	64
H.Q. U.S. ARMY COMMUNICATIONS-ELECTRONICS COMMAND & FORT MONMOUTH FORT MONMOUTH	DRSEL-SEI-V	65
H.Q. U.S. ARMY COMMUNICATIONS-ELECTRONICS COMMAND & FORT MONMOUTH FORT MONMOUTH	DRSEL-ME-F	66
OFFICE OF THE PROJECT MANAGER, SGT. YORK AIR DEFENSE GUN SYSTEM DOVER	DRCPM-ADG-C (D)	67
U.S. ARMY COMMUNICATIONS-ELECTRONICS COMMAND FORT MONMOUTH	DRSEL-SF-MR	68
U.S. ARMY ELECTRONICS R & D COMMAND (FIREFINDER / REMBASS) FORT MONMOUTH	DRCPM-FFR-TM	69
U.S. ARMY ELECTRONICS R & D COMMAND FORT MONMOUTH	DRDEL-SS-H	70
U.S. ARMY MUNITIONS PRODUCTION BASE MODERIZATION AGENCY DOVER	SMCPM-PBM-TP	71
U.S. ARMY ATMOSPHEREIC SCIENCES LABORATORY WHITE SANDS MISSILE RANGE	DELAS-AR-P	72
U.S. ARMY WHITE SANDS MISSILE RANGE WHITE SANDS MISSILE RANGE	TE-N	73
U.S. ARMY WHITE SANDS MISSILE RANGE WHITE SANDS MISSILE RANGE	STEWS-ME-SE	74
EXECUTIVE OFFICE, DARCOM-EUROPE APO NEW YORK	DRXEU-CX	75
H.Q. DARCOM-LAO EUROPE APO NEW YORK		76

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

		REF. #
STATE - MASSACHUSETTS	MAIL CODE - 01760	52
CONTACT - THOMAS G. MARTIN III	TELE. - AV 256-5208	
STATE - MICHIGAN	MAIL CODE - 48045	53
CONTACT -	TELE. -	
STATE - MICHIGAN	MAIL CODE - 48090	54
CONTACT - JOHN DOLLBERG	TELE. - AV 786-8529	
STATE - MINNESOTA	MAIL CODE - 55112	55
CONTACT - N/A	TELE. - N/A	
STATE - MISSISSIPPI	MAIL CODE - 39466	56
CONTACT - JOHN HAINES	TELE. - (601) 467-8610	
STATE - MISSOURI	MAIL CODE - 63120	57
CONTACT - DENNIS R. CHAMBERS	TELE. - AV 693-1659	
STATE - MISSOURI	MAIL CODE - 63120	58
CONTACT -	TELE. -	
STATE - MISSOURI	MAIL CODE - 63120	59
CONTACT - DENNIS R. CHAMBERS	TELE. - AV 693-1659	
STATE - MISSOURI	MAIL CODE - 63120	60
CONTACT -	TELE. -	
STATE - MISSOURI	MAIL CODE - 63188	61
CONTACT -	TELE. -	
STATE - NEVADA	MAIL CODE - 89416	62
CONTACT - LORIN D. IRELAND	TELE. - AV 830-7404	
STATE - NEW JERSEY	MAIL CODE - 07801	63
CONTACT - LLOYD E. COUGHLIN	TELE. - AV 880-2858	
STATE - NEW JERSEY	MAIL CODE - 07801	64
CONTACT - JAMES W. MCCAHILL	TELE. - AV 880-3126	
STATE - NEW JERSEY	MAIL CODE - 07703	65
CONTACT -	TELE. -	
STATE - NEW JERSEY	MAIL CODE - 07703	66
CONTACT -	TELE. -	
STATE - NEW JERSEY	MAIL CODE - 07801	67
CONTACT -	TELE. -	
STATE - NEW JERSEY	MAIL CODE - 07703	68
CONTACT - JOSEPH M. SANTARSIERO	TELE. - AV 995-4427	
STATE - NEW JERSEY	MAIL CODE - 07703	69
CONTACT -	TELE. -	
STATE - NEW JERSEY	MAIL CODE - 07703	70
CONTACT - ANTHONY S. KIRKWOOD	TELE. - AV 996-5292	
STATE - NEW JERSEY	MAIL CODE - 07801	71
CONTACT -	TELE. -	
STATE - NEW MEXICO	MAIL CODE - 88002	72
CONTACT - TED BARBER	TELE. - AV 258-2542	
STATE - NEW MEXICO	MAIL CODE - 88002	73
CONTACT - DON J. WHITE	TELE. - AV 258-1167	
STATE - NEW MEXICO	MAIL CODE - 88002	74
CONTACT - GEORGE R. WENZ	TELE. - AV 258-1019	
STATE - NEW YORK	MAIL CODE - 09333	75
CONTACT -	TELE. -	
STATE - NEW YORK	MAIL CODE - 09333	76
CONTACT - SFC ISAAC LEONARD	TELE. - AV 370-8145	

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

INSTALLATION NAMES	REF. #
WATERVLIET ARSENAL	77
U.S. ARMY RESEARCH OFFICE	78
LIMA ARMY TANK PLANT	79
McALESTER ARMY AMMUNITION PALNT	80
ARMY SPT. ACTIVITY	81
H.Q. TOBYHANNA ARMY DEPOT	82
H.Q. U.S. ARMY SUPPORT ACTIVITY	83
LETTERKENNY ARMY DEPOT SAFETY OFFICE	84
NEW CUMBERLAND ARMY DEPOT SAFETY OFFICE	85
U.S. ARMY DARCOM CATALOG DATA ACTIVITY	86
U.S. ARMY GENERAL MATERIEL AND PETROLEUM ACTIVITY	87
U.S. ARMY PLANT REP. OFFICE, BOEING VERTOL COMPANY	88
MILAN ARMY AMMUNITION PLANT	89
LONE STAR ARMY AMMUNITION PLANT	90
MORTON THIOKOL INC.	92
RED RIVER ARMY DEPOT	93
U.S. ARMY PLANT REP. OFFICE (AVRADCOM), BELL HELICOPTER TEXTRON	94
TOOELE ARMY DEPOT	95
U.S. ARMY DUGWAY PROVING GROUND	96
RADFORD ARMY AMMUNITION PLANT	97
U.S. ARMY BELVOIR R & D CENTER	98
U.S. ARMY COLD REGIONS TEST CENTER (FORT GREELY, ALASKA)	99
BADGER ARMY AMMUNITION PLANT	100
H.Q. U.S. ARMY DEPOT SYSTEMS COMMAND	101
HOLSTON ARMY AMMUNITION PLANT	102

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

ADDRESSES AND ATTENTION NUMBERS		REF. #
WATERVLIET ARSENAL		77
WATERVLIET	DRSMC-LCB-RP	
U.S. ARMY RESEARCH OFFICE		78
P.O. BOX 12211, RESEARCH TRIANGLE PARK	DRXRO-AO	
LIMA ARMY TANK PLANT		79
1155 BUCKEYE ROAD, LIMA	DRCPM-GCM-UO	
McALESTER ARMY AMMUNITION PLANT		80
McALESTER		
		81
PHILADELPHIA		
H.Q. TOBYHANNA ARMY DEPOT		82
TOBYHANNA	SDSTO-AN	
H.Q. U.S. ARMY SUPPORT ACTIVITY		83
2800 SOUTH 20th STREET, PHILADELPHIA	STRAP-P	
LETTERKENNY ARMY DEPOT		84
CHAMBERSBURG	SDSLE-SS	
NEW CUMBERLAND ARMY DEPOT		85
NEW CUMBERLAND	SDSNC-ASA	
U.S. ARMY DARCOM CATALOG DATA ACTIVITY		86
NEW CUMBERLAND ARMY DEPOT, NEW CUMBERLAND	DRXCA-PP	
U.S. ARMY GENERAL MATERIEL AND PETROLEUM ACTIVITY		87
NEW CUMBERLAND ARMY DEPOT, NEW CUMBERLAND	STRGP-M	
U.S. ARMY PLANT REP. OFFICE, BOEING VERTOL COMPANY		88
P.O. BOX 16859, PHILADELPHIA	SAVBV-IS	
MILAN ARMY AMMUNITION PLANT		89
MILAN	SMCMI-SF	
LONE STAR ARMY AMMUNITION PLANT		90
TEXARKANA	SMCLS-SF	
MORTON THIOKOL INC.		92
P.O. BOX 1149 , MARSHALL	SMCLO-SF	
RED RIVER ARMY DEPOT		93
TEXARKANA	SDSRR-AF	
U.S. ARMY PLANT REP. OFFICE (AVRADCOM), BELL HELICOPTER TEXTRON		94
P.O. BOX 1605, FORT WORTH	SAVBE-CD	
TOOELE ARMY DEPOT		95
TOOELE	SDSTE-SAF	
U.S. ARMY DUGWAY PROVING GROUND		96
DUGWAY	STEDP-SA	
RADFORD ARMY AMMUNITION PLANT		97
P.O. BOX 2, RADFORD	SMCRA-SF	
U.S. ARMY BELVOIR R & D CENTER		98
FORT BELVOIR	STRBE-VR	
U.S. ARMY COLD REGIONS TEST CENTER		99
APO SEATTLE	STECR-AD-S	
BADGER ARMY AMMUNITION PLANT		100
BARABOO	SMCBA-SE	
H.Q. U.S. ARMY DEPOT SYSTEMS COMMAND		101
CHAMBERSBURG	DRSDS-T	
HOLSTON ARMY AMMUNITION PLANT		102
KINGSPORT	SMCHO-SF	

LISTING OF HEALTH PHYSICS SURVEY RESPONSES

		REF. #
STATE - NEW YORK	MAIL CODE - 12189	77
CONTACT - JAMES J. MALINSKI	TELE. - AV 974-5016	
STATE - NORTH CAROLINA	MAIL CODE - 27709	78
CONTACT -	TELE. -	
STATE - OHIO	MAIL CODE - 45804	79
CONTACT - WILLIAM V. CRADY	TELE. - AV 786-6223	
STATE - OKLAHOMA	MAIL CODE - 74501	80
CONTACT - LEE V. MAXWELL	TELE. - AV 956-6433	
STATE - PENNSYLVANIA	MAIL CODE -	81
CONTACT -	TELE. -	
STATE - PENNSYLVANIA	MAIL CODE - 18466	82
CONTACT - ROLIN EDWARDS	TELE. - AV 795-7020	
STATE - PENNSYLVANIA	MAIL CODE - 19101	83
CONTACT -	TELE. -	
STATE - PENNSYLVANIA	MAIL CODE - 17201	84
CONTACT - RICHARD A. LARSON	TELE. - AV 238-6646	
STATE - PENNSYLVANIA	MAIL CODE - 17070	85
CONTACT - DAVID C. WILE	TELE. - AV 977-6116	
STATE - PENNSYLVANIA	MAIL CODE - 17070	86
CONTACT -	TELE. -	
STATE - PENNSYLVANIA	MAIL CODE - 17070	87
CONTACT -	TELE. -	
STATE - PENNSYLVANIA	MAIL CODE - 19142	88
CONTACT -	TELE. -	
STATE - TENNESSEE	MAIL CODE - 38258	89
CONTACT - W.E. HOLMES	TELE. - AV 966-6936	
STATE - TEXAS	MAIL CODE - 75501	90
CONTACT - TRACY K. BRAMLETT	TELE. - AV 829-1812	
STATE - TEXAS	MAIL CODE - 75671	92
CONTACT - JOSEPH L. COOPER	TELE. - AV 956-2126	
STATE - TEXAS	MAIL CODE - 75507	93
CONTACT - WARREN D. GRAEF, JR.	TELE. - AV 829-2371	
STATE - TEXAS	MAIL CODE - 76101	94
CONTACT -	TELE. -	
STATE - UTAH	MAIL CODE - 84074	95
CONTACT - GAIL H. CHRISTIANSEN	TELE. - AV 790-2713	
STATE - UTAH	MAIL CODE - 84022	96
CONTACT -	TELE. -	
STATE - VIRGINIA	MAIL CODE - 24141	97
CONTACT - DOUGLAS M. DAY	TELE. - (703) 639-8705	
STATE - VIRGINIA	MAIL CODE - 22060	98
CONTACT -	TELE. - AV 334-5437	
STATE - WASHINGTON	MAIL CODE - 98733	99
CONTACT - SSG WILLIAM F. MARTIN	TELE. - AV 872-3201	
STATE - WISCONSIN	MAIL CODE - 53913	100
CONTACT - LOUIS P. HELLEWELL	TELE. - (608) 356-5525	
STATE - PENNSYLVANIA	MAIL CODE - 17201	101
CONTACT - JOHN E. RANKIN	TELE. - AV 238-7328	
STATE - TENNESSEE	MAIL CODE - 37660	102
CONTACT - RICHARD A. JEWELL	TELE. - (615)-247-9111	

APPENDIX C

RADIATION SAFETY PERSONNEL SURVEY

FEBRUARY 28, 1986

DEPARTMENT OF THE ARMY
HEADQUARTERS US ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND
5001 EISENHOWER AVENUE, ALEXANDRIA, VA. 22333

S: 15 June 1984
14 May 1984

DRCSF

SUBJECT: Radiation Safety Personnel Survey, RCS: DRCSF-1080

SEE DISTRIBUTION

1. The Radiation Protection Program is a highly visible and mission essential program that is currently being jeopardized by the inability to recruit and retain qualified radiation safety personnel. To document the scope of this problem, all DARCOM activities that have responsibilities to possess, use or store radioactive material or to use sources of ionizing or nonionizing radiation, i.e., x-rays, accelerators, lasers or microwaves or that have responsibilities related to licensing and control of radioactive materials, will complete the attached survey.

2. The requested data requires input from a variety of sources: (1) the supervisor responsible for the local radiation protection program, (2) the personnel specialist servicing the program, and (3) all radiation safety personnel or individuals responsible for performing radiation safety program functions. In the event information requested involves classified material, reports should be classified accordingly.

3. Enclosed are 3 copies of the questionnaire for completion by these sources. Additional copies should be made by your organization as necessary.

4. Request the survey be completed and returned by 15 June 1984 directly to Commander, US Army Belvoir Research and Development Center, ATTN: STRBE-VR (Mr. McMillan), Fort Belvoir, VA 22060. A negative reply is also required. Direct any questions concerning the survey to Mr. Robert C. McMillan at Belvoir Research and Development Center, AUTOVON 354-5133.

3 Encl
as

CLAUDE M. KICKLIGHTER
Major General, USA
Chief of Staff

DISTRIBUTION:

B & C

INSTRUCTIONS FOR COMPLETING SURVEY

The attached survey is a part of a DARCOM Radiation Safety Personnel Study. The purpose of this study is to identify and document the current requirements and recent recruitment experience for radiation safety personnel throughout DARCOM. This information is required to effectively plan the future of the DARCOM Radiation Protection Program. The survey also asks for current radiation protection personnel--health physicists, radiation protection officer (RPO), alternates, technicians, etc.-- qualifications. This information will be used to develop specific training to meet current regulatory requirements. There are several parts to the survey. Each part covers different elements of the local radiation protection program. These should be filled out and reviewed by different people.

Part I	Scope of Radiation Protection Program To be jointly prepared by RPO and Supervisor
Part II	Personnel Management To be prepared by the Supervisor of the RPO and to be reviewed by a personnel specialist
Part III	Radiation Protection Tasks/Responsibilities To be prepared by the RPO
Part IV	Training Resume To be prepared by each RPO, alternate RPO, and Radiation Safety Persons
Part V	Instrumentation To be prepared by each RPO and alternate RPO

Reproduce copies of parts IV through V as needed for each radiation safety person. Combine all parts for submittal of the survey. If insufficient space has been provided attach supplemental sheets(s). The top of such supplemental sheet(s) should show:

a. Name of organization and preparing individual as given in Part I.

b. Supplemental sheet for Part (fill in number). Also indentify the paragraph numbers being supplemented.

RADIATION SAFETY PERSONNEL SURVEY - 1984

GENERAL

1. Installation/Organization Name:

2. Mailing Address:

3. Name of person preparing survey:

   a. Telephone number:

4. Name of personnel Specialist who reviewed:

   a. Telephone number:

PART I Scope of Radiation Protection Program

1. Type of Program (Mark areas that apply)
____Ammunition Plant
____Arsenal
____Commodity/Readiness
____Depot Storage
____Depot Maintenance
____Research and Development Laboratory
____Testing
____Other (identify)_____

2. Attach a copy of all NRC Licenses and Department of Army Authorizations issued to your activity and a copy of your current radioactive materials inventory.

3. If your Activity uses, repairs, or stores radioactive material based on a license or authorization held by some other organization, please list the license number and the name of the organization holding the license or authorization.

_____	_____
_____	_____
_____	_____

4. Number of locations where Ionizing Radiation, lazers and microwaves are used....._____

5. Number of Ionizing Radiation workers....._____

6. Number of Microwave users....._____

7. Number of Laser users....._____

8. Number of radioactive shipments per year....._____
and receipts per year....._____

9. Number of radioactive waste shipments per year....._____

10. Emergency Response Capability

Trained Personnel

NAME	Training and Experience
_____	_____
_____	_____
_____	_____

11. Projected ionizing radiation projects over next 5 years:

12. Projected laser projects over next 5 years:

13. Projected microwave and other nonionizing radiation projects over next 5 years:

14. Sources

a. X-Ray

Industrial X-ray (Fixed)

Number	Type	Voltage (KVP)	Current (ma)

b. Portable X-Ray

Number	Type	Voltage (KVP)	Current (ma)

c. Laboratory X-ray

Number	Type	Voltage (KVP)	Current (ma)

d. Other sources (high voltage electron tubes, klystrons, electron microscopes, applications involving high voltages)

Number	Type	Voltage	Current

e. Accelerators

Number	Type

f. Lasers

Number	Type	Power output	Class

g. Microwave

Number	Type	Output

h. Other nonionizing sources

i. Non-Army radiation usage on your post or activity. List DA permit numbers and names of non-Army organizations.

Number	Name

12. Instrumentation

a. Laboratory

Number	Type	Primary Use	Available for Off Post Emergency response	
	liquid scintillation		Yes	No
	low background alpha beta		Yes	No
	gamma spectroscopy		Yes	No
	gas proportional		Yes	No
			Yes	No
			Yes	No

b. Survey Type

Number	Type	Primary Uses	Available for Off Post Emergency response	
_____	alpha survey	_____	Yes	No
_____	beta survey	_____	Yes	No
_____	G/M meter	_____	Yes	No
_____	Neutron survey	_____	Yes	No
_____	_____	_____	Yes	No
_____	_____	_____	Yes	No
_____	_____	_____	Yes	No

c. Microwave and RF survey meters

Number	Type	Primary Uses
_____	_____	_____
_____	_____	_____
_____	_____	_____

d. Laser survey meters

Number	Type	Primary Uses
_____	_____	_____
_____	_____	_____
_____	_____	_____

PART II PERSONNEL MANAGEMENT

1. Radiation Protection Personnel Turnover During Last Five Years. Radiation protection personnel includes prime and alternate radiation protection persons, health physicists, health physics technicians and their military counterparts.

YEAR	MOS & GRADE	OFFICE (to which was assigned)	REASONS FOR LEAVING (if known)
1983			
1982			
1981			
1980			
1979			

2. Radiation Protection Personnel. (Primary, Alternate RPO's, and other Radiation Safety Personnel).

GRADE AND OCCUPATIONAL SERIES	OFFICE TO WHICH ASSIGNED	TIME DEDICATED TO RADIATION PROTECTION	YEARS TO POSSIBLE RETIREMENT
		%	
		%	
		%	
		%	
		%	
		%	
		%	

3. Describe the Organizational structure where the RPO and alternate are located, and the mechanism and channels for advising the Commander on required radiation protection actions.

4. List the number of days radiation programs were suspended in each of the last three years due to lack of radiation protection personnel being available on site. (NOTE: Conduct of radiation operations in the absence of approved radiation protection personnel is a violation of Title 10 CFR for operations covered by NRC licenses issued with a condition that use is under the direct supervision of those named personnel.)

YEAR	LENGTH OF PROGRAM INTERRUPTION	REASON WHY PRIME AND ALTERNATE RADIATION PERSONS WERE UNAVAILABLE
1983	_____Days	
1982	_____Days	
1981	_____Days	

5. Identify current Prime (P) and Alternate (Alt) Radiation Protection Personnel spaces and the length of time the spaces have been vacant during last three years and reason if the vacancy exceeded 30 days.

YEAR	MOS & GRADE	DURATION	REASON (If more than 30 days)
1983	_____	_____Days	_____
	_____	_____	_____
	_____	_____	_____
1982	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
1980	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

6. Attach a copy of the job description for each radiation protection space whether or not currently filled. List the job numbers of the job descriptions that have been attached:

Job Number	*Current* Incumbent	How Current Job Description was evaluated
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

7. Estimated man years to accomplish required Radiation Protection tasks.

8. What portions of Radiation Protection Program have your contracted out over last 5 years?

a. Scope

b. Cost

PART III RADIATION PROTECTION TASKS/RESPONSIBILITIES

1. Instructions: For each task, list under "YEAR FREQ" the number of times the task is performed each year; under "MNHRS EXP'D" the total manhours actually expended per year by all radiation protection personnel; and under "MNHRS REQ'D" the total manhours required to perform the task in a manner consistent with Federal, Army, DARCOM, and local regulations; with license/authorization conditions, and commander/supervisory instructions.

MANAGEMENT

TASK	YEAR FREQ	MNHRS EXP'D	MNHRS REQ'D	IDENTIFIEI AS SHORT-
1. License/authorization/permit requests Preparation, review, and follow on				
2. Microwave safety reviews				
3. Laser safety reviews				
4. Review worker, area supervisor qualification				
5. System safety input, reviews				
6. Rad material procurement package preparation, reviews, and approvals				
7. Proposed facilities and operational reviews				
8. Radiation protection committee functions				
9. Radioactive material/radiation device transfer proposal reviews/processings				
10. Specialized Safety Hazard Evaluation				
a. Electrical				
b. Munitions				
11. Contractual preaward, postaward surveys and administration				
12. Technical Data Package input/reviews				
13. Equipment Improvement Reports				
14. Depot Maintenance Work Request				
15. Program evaluation/inspection (receive)				
16. " " (conduct)				
17. Employee suggestions				

PLANNING

18.	Prepare/review regulatory implementing				
19.	Prepare/review license/authorization implementing procedures				
20.	SOP's and Work Permits				
21.	Technical and regulatory literature reviews and input				
22.	Emergency planning, drills				
23.	Environmental studies/monitoring				
24.	Record preparation and maintenance				
25.	Respond to higher HQ correspondence				
26.	Radiation safety calculations/studies				
27.	Meetings				
28.	Radiation safety surveys/monitoring and planning				
29.	Budgeting				

TRAINING

30.	Worker instruction (10CFR19, 20, & 21) (training preparation and annual presentation to users, support personnel, fertile females, emergency teams.)				
31.	Microwave safety instruction				
32.	Laser safety training				

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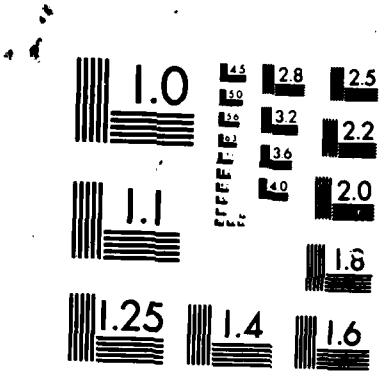

OPERATIONS

33.	Assistance/guidance to staff and workforce				
34.	Dosimetry (Issue, document, & verification)	_____	_____	_____	_____
35.	Area health physics surveys (Includes measurements, evaluations, risk assessment, preventative measures, documentation and followup	_____	_____	_____	_____
36.	Monitoring storage and work areas	_____	_____	_____	_____
37.	Monitoring incoming shipments and opening packages.	_____	_____	_____	_____
38.	Monitoring outgoing shipments	_____	_____	_____	_____
39.	Marking and labeling equipment/areas	_____	_____	_____	_____
40.	Incident investigation, reporting, and corrective measures	_____	_____	_____	_____
41.	Laser range	_____	_____	_____	_____
42.	Laser inventory	_____	_____	_____	_____
43.	Laser goggles, interlock and operational monitoring.	_____	_____	_____	_____
44.	Acceptance/verification testing	_____	_____	_____	_____
45.	Radioactive waste disposal	_____	_____	_____	_____
46.	Sealed source leak testing	_____	_____	_____	_____
47.	Calibration	_____	_____	_____	_____
48.	Contamination control/decontamination	_____	_____	_____	_____
49.	Inventories	_____	_____	_____	_____
50.	Microwave device inventory	_____	_____	_____	_____

PART IV TRAINING RESUME

INSTRUCTION.- To be completed by each radiation protection person listed in paragraph 2, PART II.

Name _____
(last) (first) (MI)
MOS and Grade _____
Work telephone numbers
AUTOVON: _____.
Area Code _____ Number _____

For each of the following types of training indicate the year of successful completion ,if applicable, and one or more of the following codes.

T - I have never had this training but I need such training.
R - I have had such training but I need a refresher course.
L - This training is available occasionally on post or at a nearby institution.

I. Academic Training

YEAR	T R L	
_____	_____	algebra
_____	_____	geometry
_____	_____	trigonometry
_____	_____	calculus (differiential)
_____	_____	calculus (integral)
_____	_____	biology
_____	_____	radiobiology
_____	_____	chemistry
_____	_____	chemistry (analytical)
_____	_____	chemistry (organic)
_____	_____	radiochemistry
_____	_____	physics
_____	_____	physics (modern, nuclear or atomic)
_____	_____	nuclear engineering
_____	_____	electronics
_____	_____	ethics
_____	_____	English composition
_____	_____	public speaking
_____	_____	supervision
_____	_____	management
_____	_____	psychology (educational, human or group behavior, human relation
_____	_____	ecology or environmental science

2. Ionizing Radiation Protection (include number of instruction hours)

YEAR	HOURS	T R L	
____	____	____	Basic radiation protection
____	____	____	Occupational radiation protection
____	____	____	Instrumentation (characteristics, use)
____	____	____	Instrument calibration
____	____	____	Radioactivity measurement and standardization
____	____	____	Air monitoring techniques
____	____	____	Area monitoring techniques
____	____	____	External exposure rate calculations
____	____	____	" " , point source
____	____	____	" " , extended source
____	____	____	" " , contact surface
____	____	____	Industrial hygiene instrumentation and survey technique
____	____	____	Mathematics and calculations basic to the use and measurement of radioactivity
____	____	____	Dosimetry, external
____	____	____	Dosimetry, internal
____	____	____	Dosimetry, neutron
____	____	____	Dosimetry, film
____	____	____	Dosimetry, TLD
____	____	____	Bioassay techniques
____	____	____	Health physics surveys
____	____	____	Transportation of radioactive materials
____	____	____	Radioactive waste managment
____	____	____	Record keeping
____	____	____	Emergency planning and control procedures
____	____	____	Environmental radiological monitoring
____	____	____	Industrial x-ray safety
____	____	____	Accelerator safety
____	____	____	Reactor safety
____	____	____	Contamination control and decontamination
____	____	____	Depleted uranium manufacturing
____	____	____	Depleted uranium munition safety
____	____	____	ALARA
____	____	____	Quality assurance for radiation safety

Others (Identify other types of training that assisted you in performing your radiation protection responsibilities, and explain the usefulness of the training for others.)

PART V INSTRUMENTATION

INSTRUCTIONS. - To be completed by each radiation protection person listed in paragraph 2, PART II.

Name _____
(last) (first) (MI)

For each of the following types of instruments indicate your proficiency or desire for training using the following codes. More than one code may be used for each type of instrument.

O - I know how to operate
C - I know how to calibrate
T - I require training
A - I have one available for use at this installation

1. Laboratory Instruments
   O C T A N
   _____Liquid scintillation counting system
   _____Gas flow proportional counter
   _____Multichannel Analyzer
   _____GeLi Detector
   _____Scintillation Detector
   _____Thermoluminescent Dosimeter Reader
   _____R-chambers

2. Survey Instruments
   O C T A N
   _____Alpha Gas Flow meter
   _____Alpha Scintillation
   _____Ion Chamber
   _____Single Channel Analyzer
   _____RPO.Emergency Kit
   _____GM meter
   _____Fast Neutron
   _____Slow Neutron
   _____Thermal Neutron

3. Air monitoring Instruments
   O C T A N
   _____Gas monitors (such as for tritium)
   _____Particulate monitors (such as the Staplex)
   _____Air velocity measurement

4. Personnel monitoring instruments
   O C T A N
   _____Pocket dosimeters (self readers and ion chamber)
   _____Film badges
   _____Thermoluminescent dosimeters (TLD's)
   _____Chirpers

END

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